Ex. B

US011248391B2

(12) **United States Patent**
North et al.

(10) **Patent No.: US 11,248,391 B2**
(45) **Date of Patent: *Feb. 15, 2022**

(54) **WEIGHT SYSTEMS AND METHODS STABILIZING OBJECTS**

(71) Applicant: **Premier Tents, Inc.**, Bellingham, WA (US)

(72) Inventors: **Robert Wallace North**, Bellingham, WA (US); **Paula Kay North**, Bellingham, WA (US)

(73) Assignee: **PREMIER TENTS, INC.**, Bellingham, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **16/860,815**

(22) Filed: **Apr. 28, 2020**

(65) **Prior Publication Data**

US 2020/0256080 A1 Aug. 13, 2020

Related U.S. Application Data

(63) Continuation of application No. 16/578,054, filed on Sep. 20, 2019, now Pat. No. 10,633,882, which is a continuation of application No. 16/216,810, filed on Dec. 11, 2018, now Pat. No. 10,472,846, which is a continuation of application No. 15/461,160, filed on Mar. 16, 2017, now Pat. No. 10,151,121, which is a

(Continued)

(51) **Int. Cl.**

E04H 12/22	(2006.01)
A45B 23/00	(2006.01)
A45B 25/14	(2006.01)

(52) **U.S. Cl.**

CPC ***E04H 12/2246*** (2013.01); ***A45B 23/00*** (2013.01); *A45B 2023/0012* (2013.01); *A45B 2023/0031* (2013.01); *A45B 2023/0037* (2013.01); *A45B 2025/146* (2013.01)

(58) **Field of Classification Search**

CPC A45B 2023/0012; A45B 25/22; E04H 12/2246; Y10S 248/91

See application file for complete search history.

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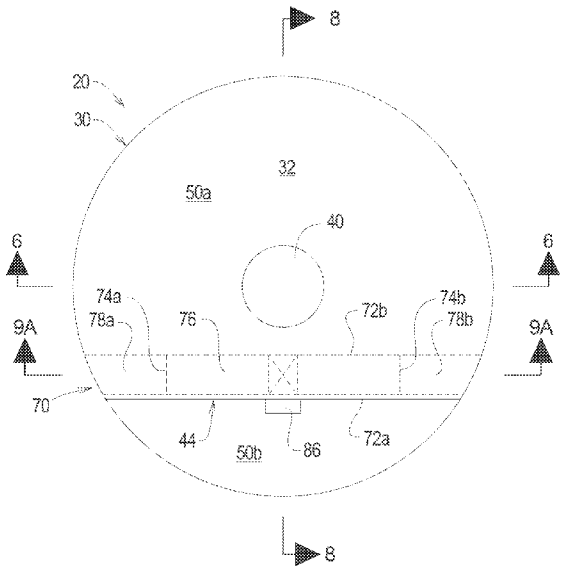
Primary Examiner — Bradley Duckworth
(74) *Attorney, Agent, or Firm* — Scahcht Law Office, Inc.; Michael R. Schacht

(57) **ABSTRACT**

A weight system for containing fill material for supporting a free-standing object, comprising a container defining an interior chamber adapted to contain the fill material and a closure system. The closure system is arranged to allow the container to be configured in a closed configuration and an open configuration. Fill material is arranged within the interior chamber when the container is in the open configuration.

16 Claims, 11 Drawing Sheets



Related U.S. Application Data

continuation of application No. 15/273,494, filed on Sep. 22, 2016, now Pat. No. 10,087,647.

(60) Provisional application No. 62/390,096, filed on Mar. 21, 2016.

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FIG. 1

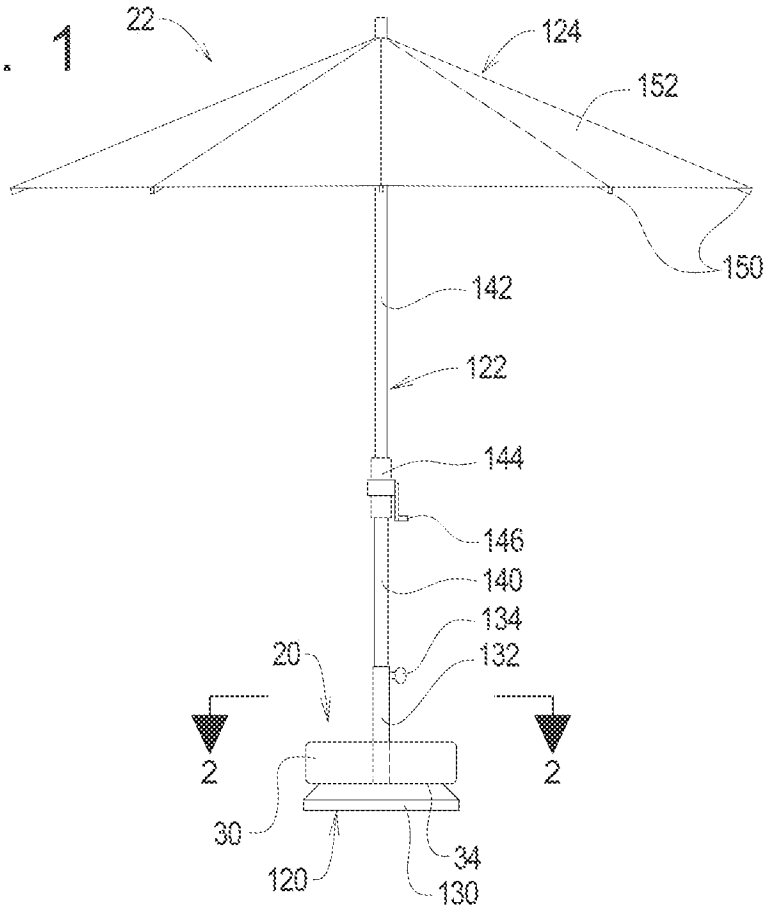
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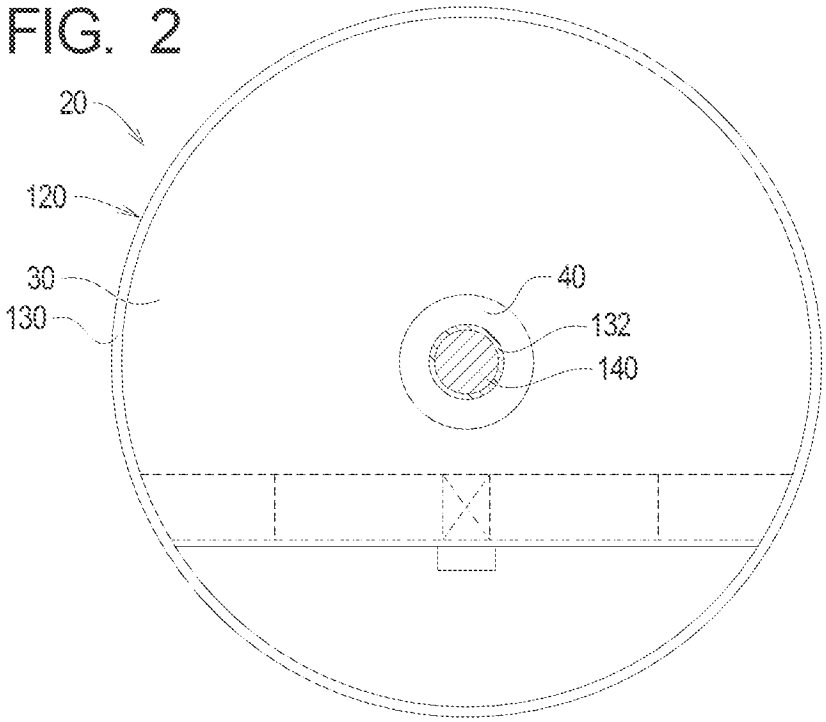
FIG. 2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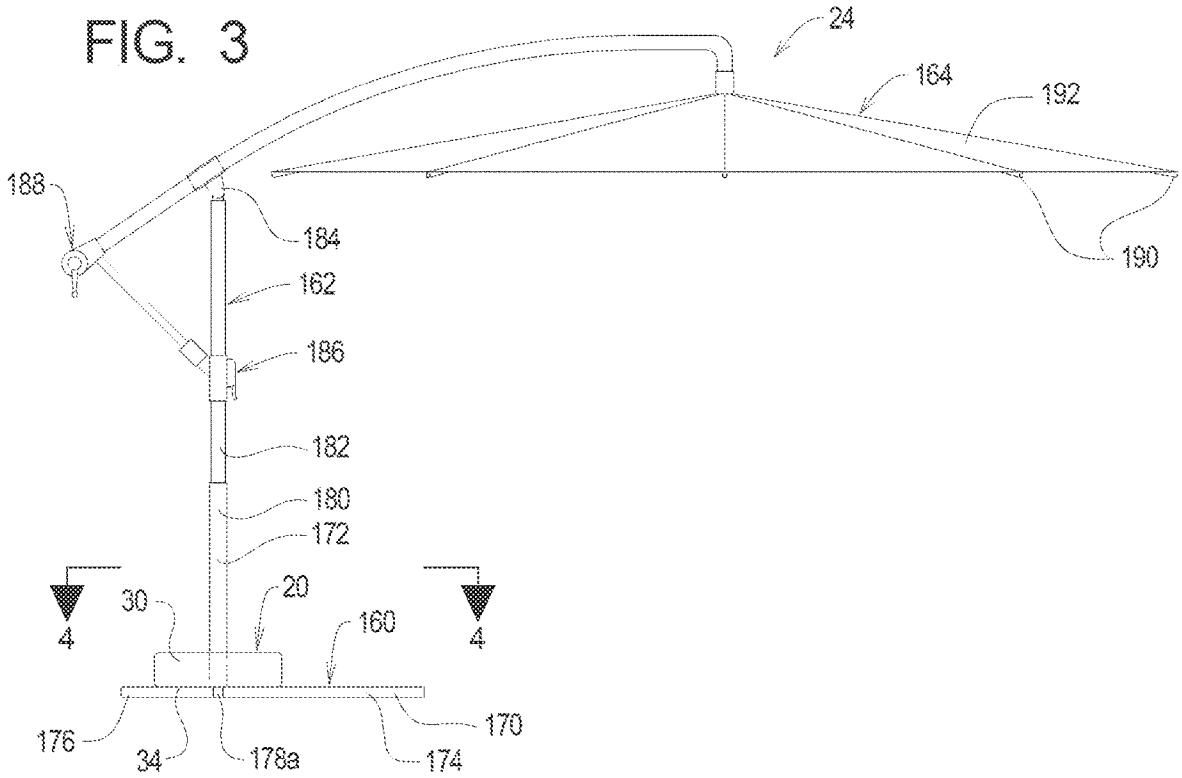
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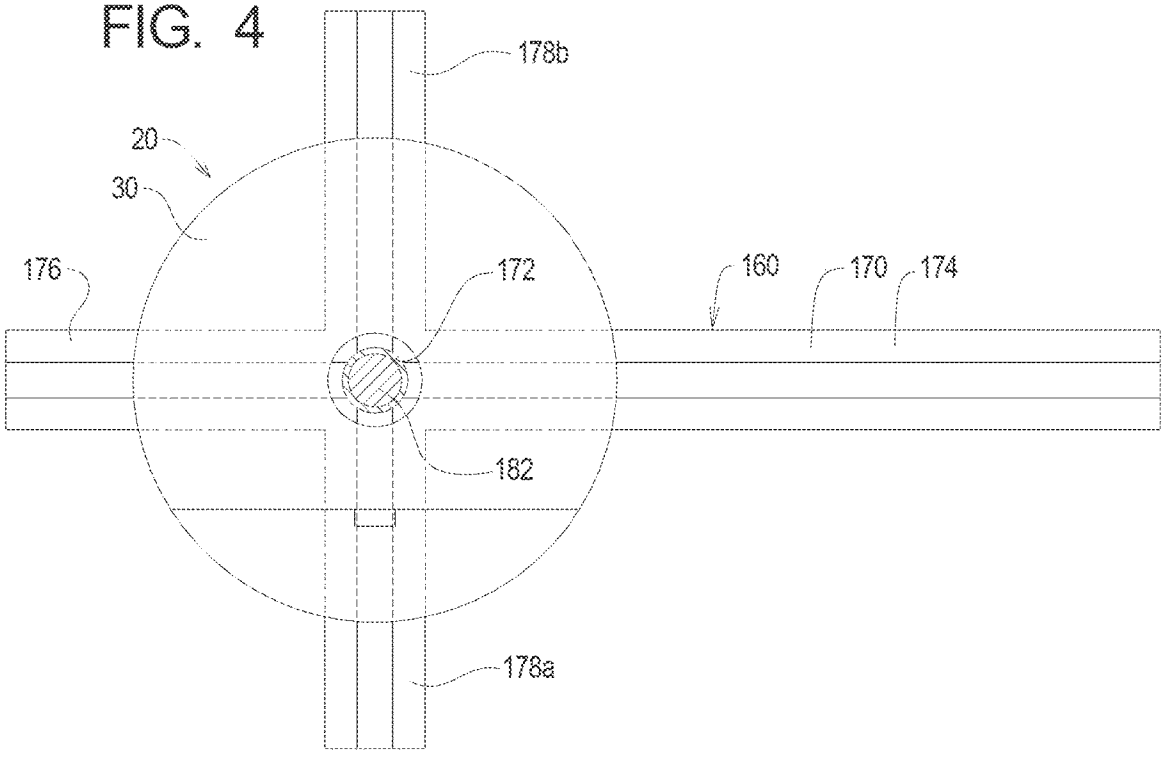
FIG. 4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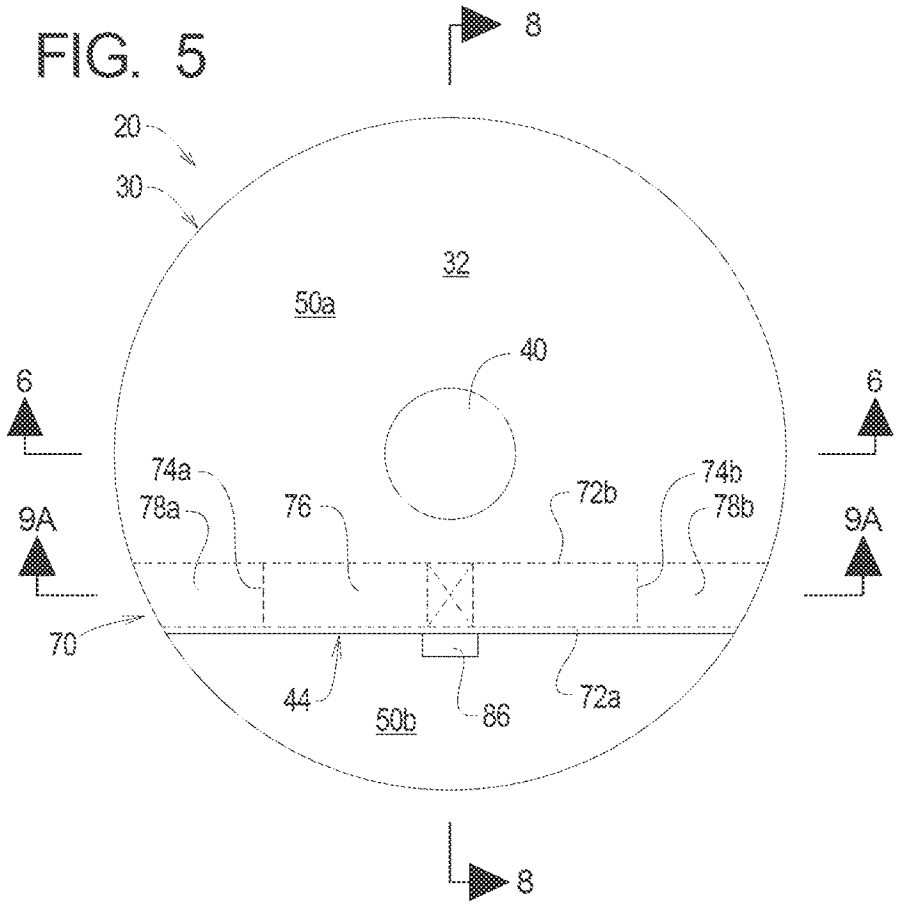
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FIG. 6

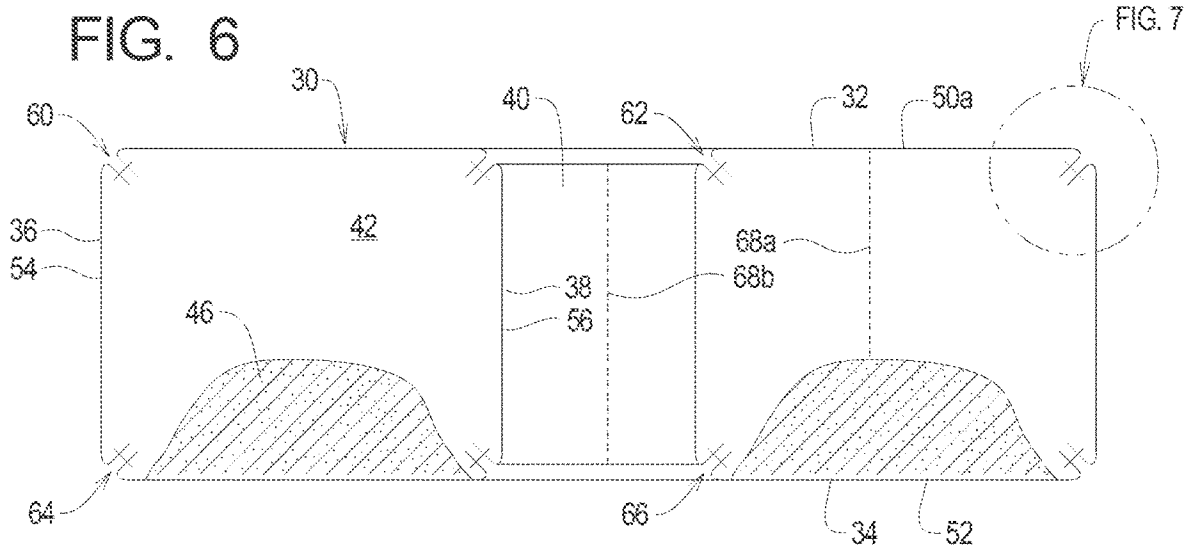
FIG. 7
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FIG. 7

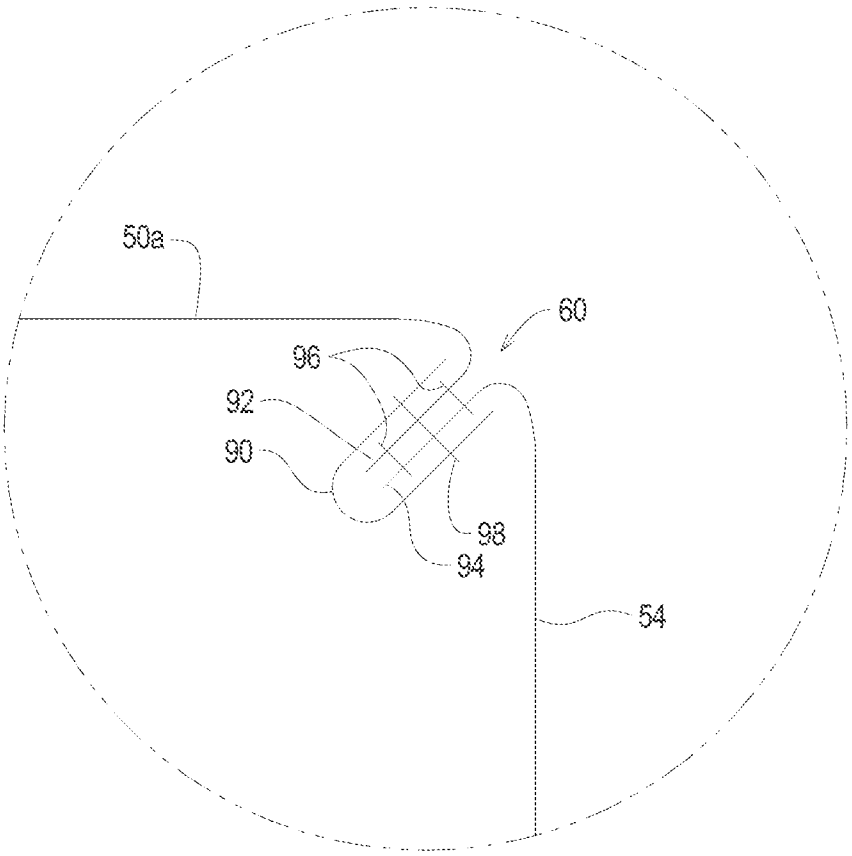
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FIG. 8

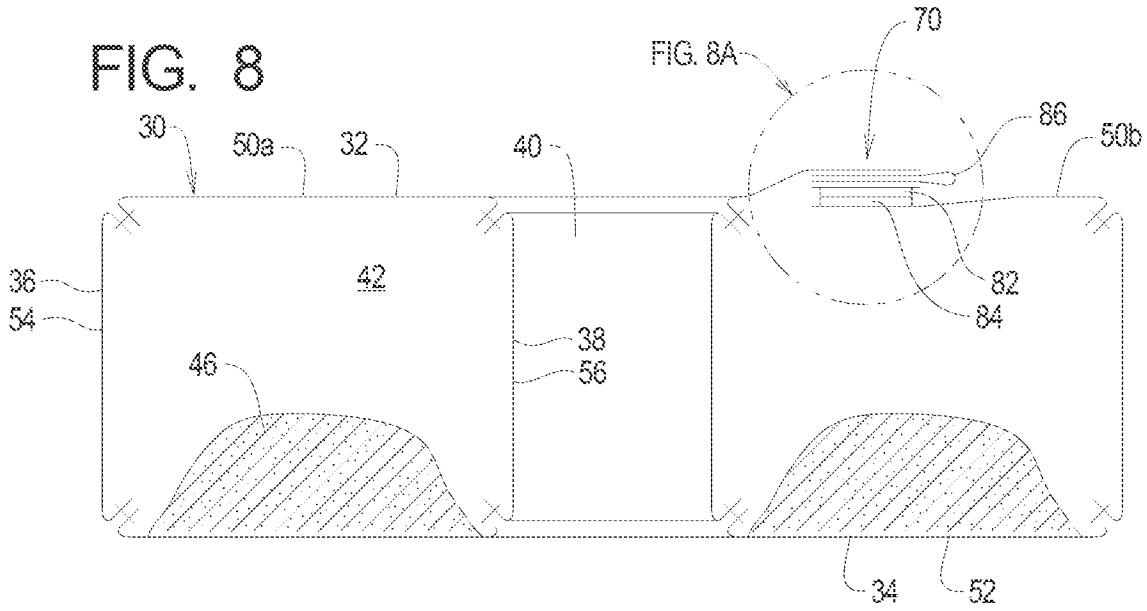
FIG. 8A
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FIG. 8A

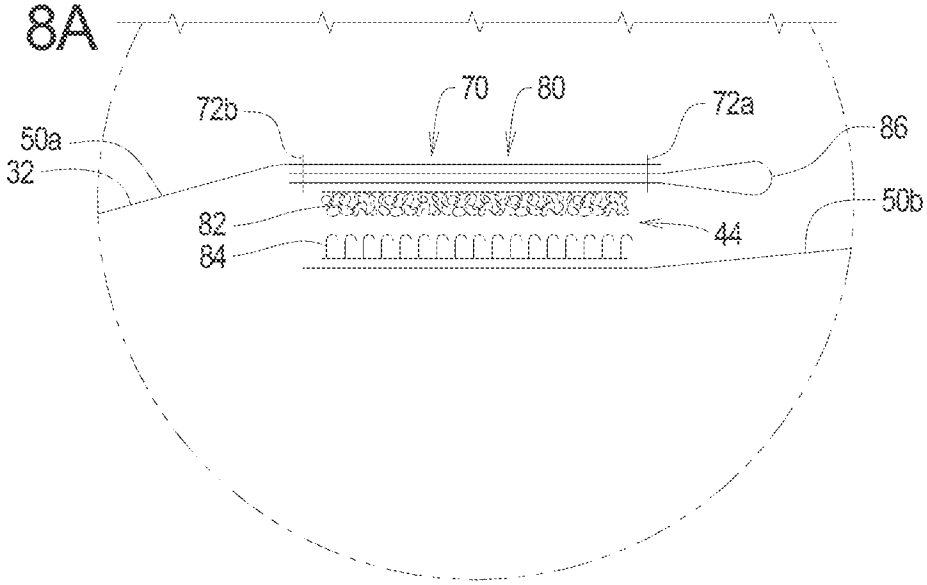
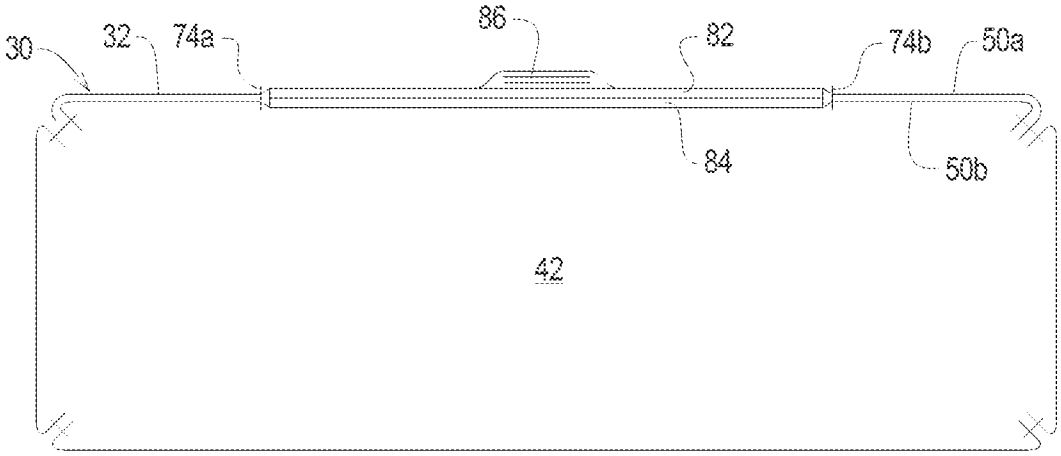


FIG. 9A



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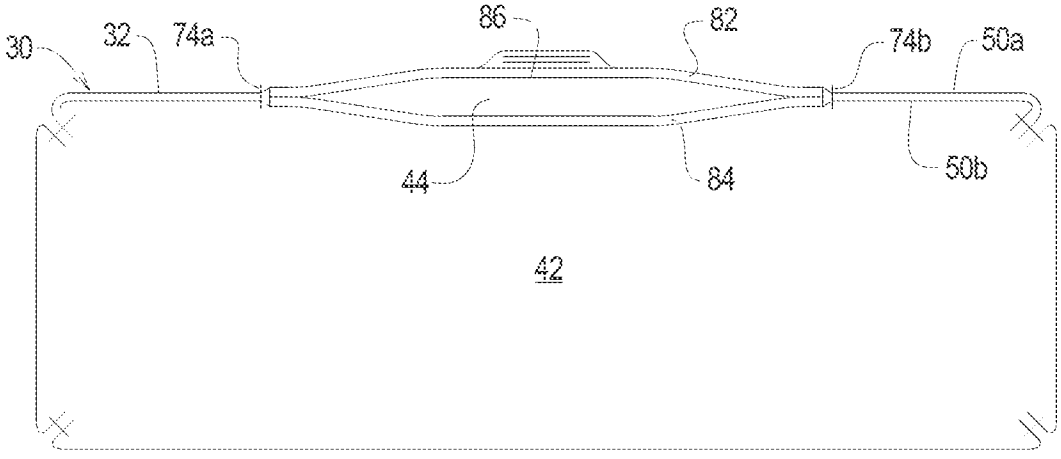

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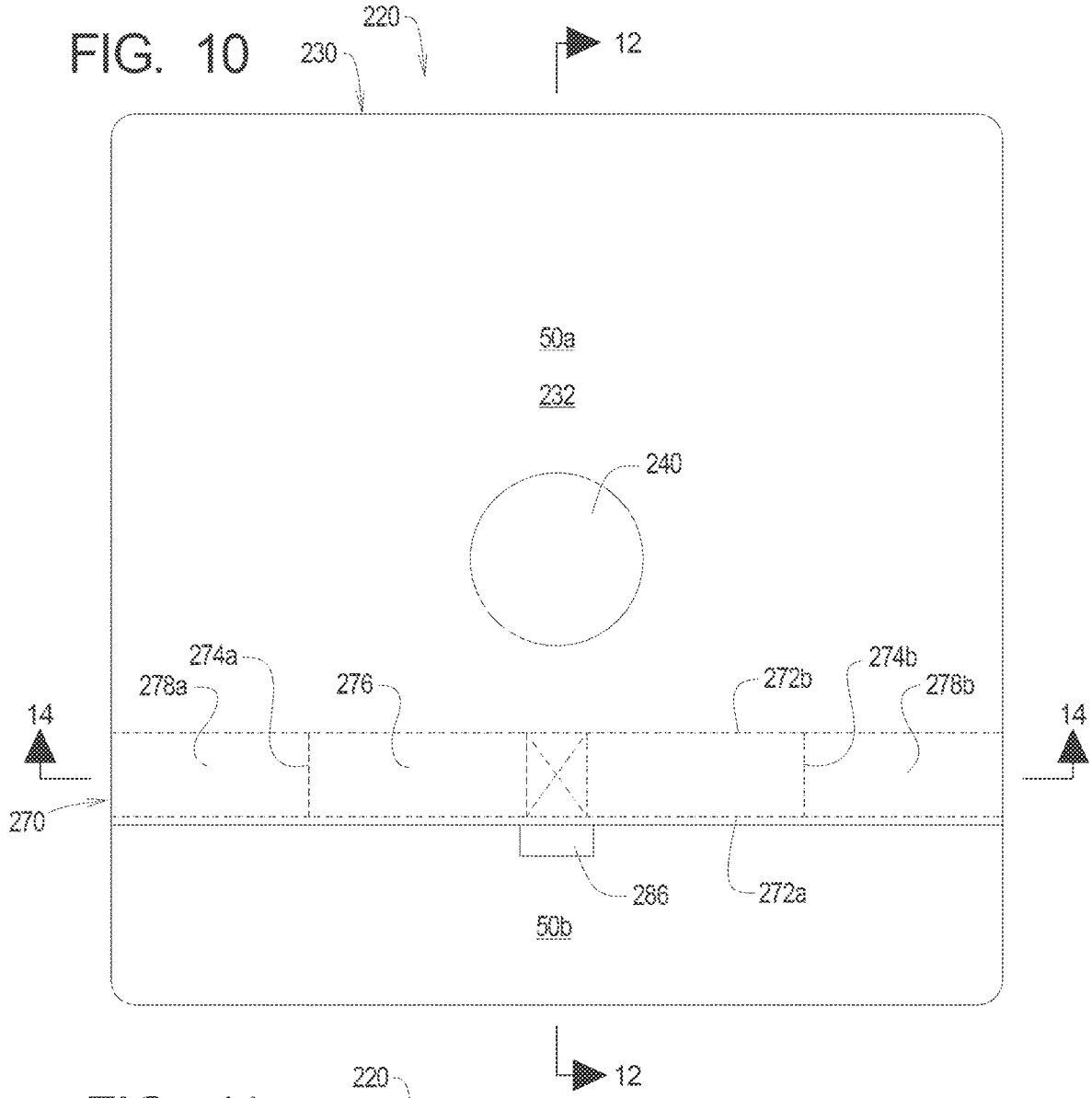
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FIG. 11

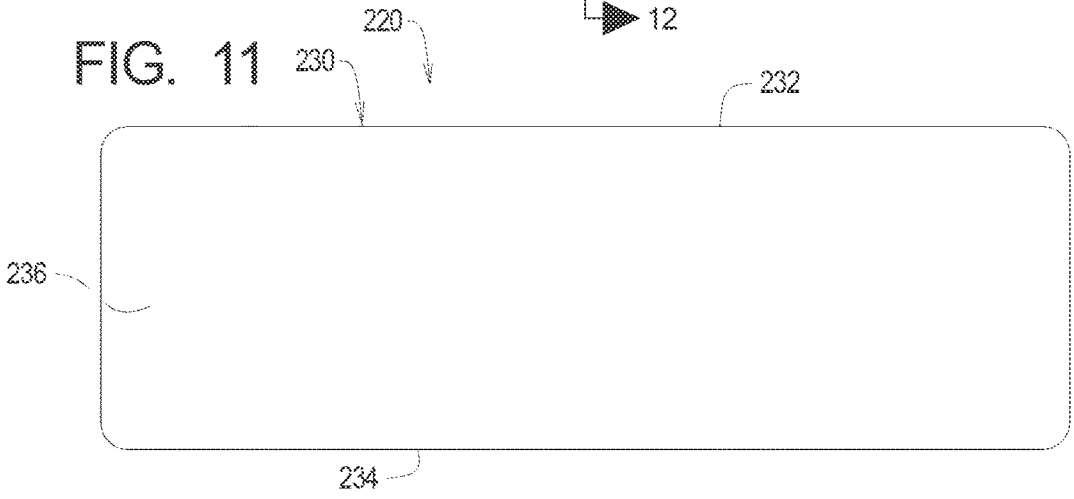
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FIG. 12

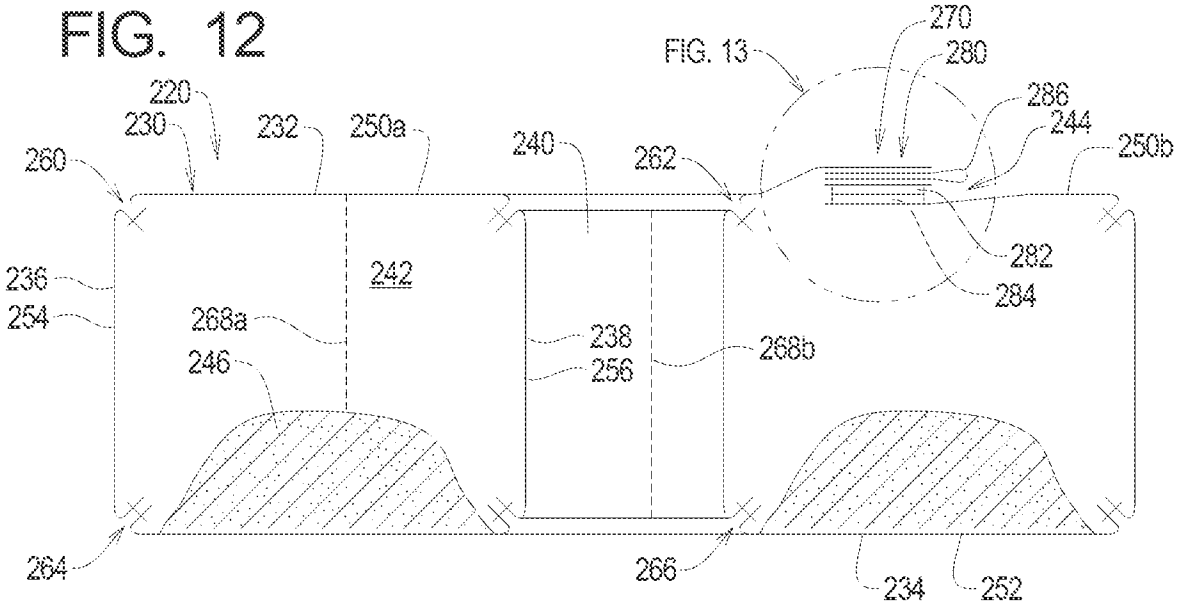
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FIG. 13
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FIG. 13

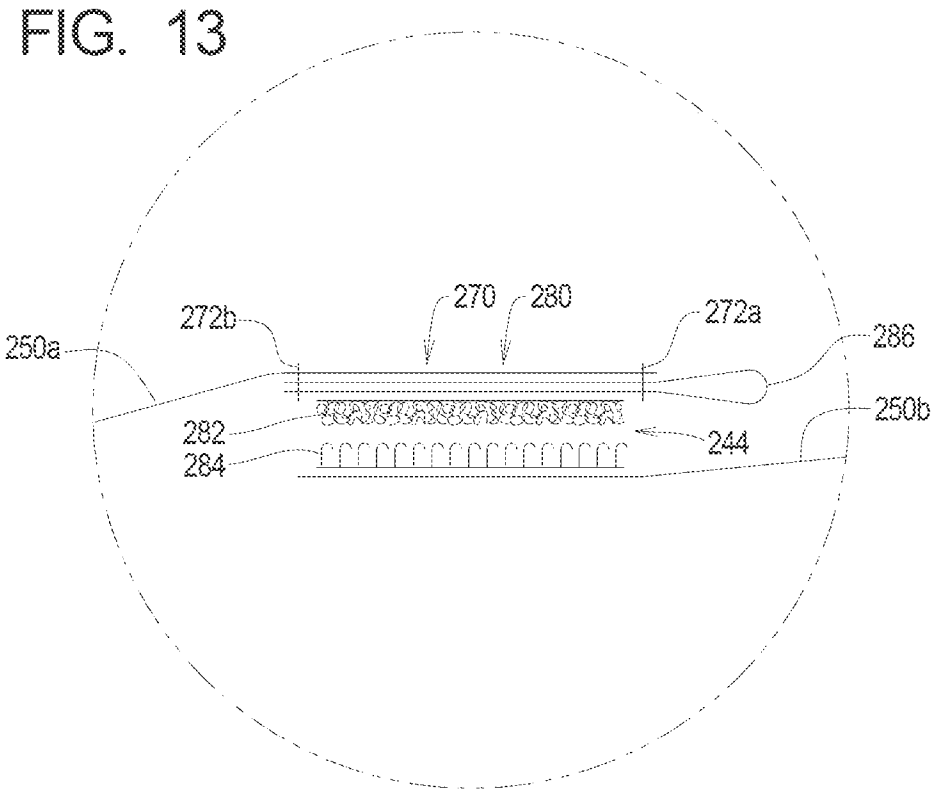
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FIG. 14

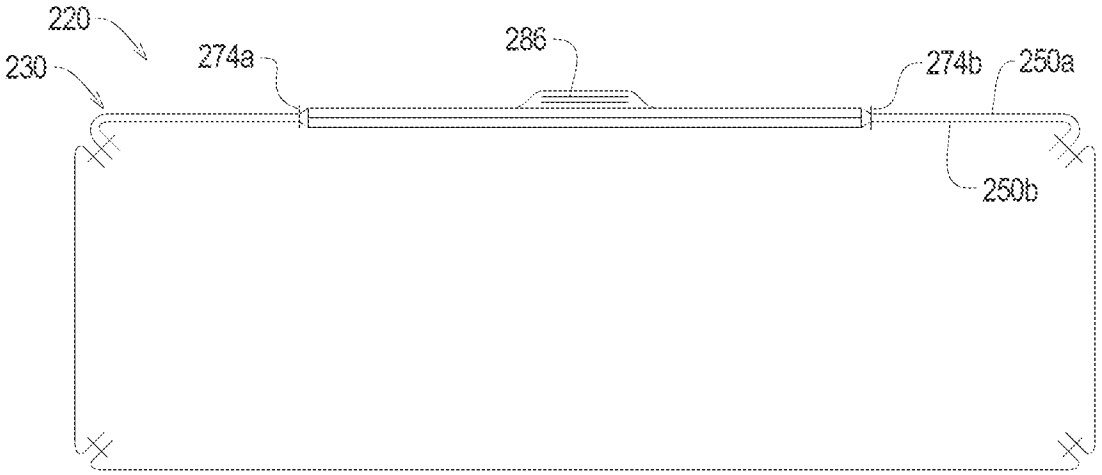
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FIG. 15

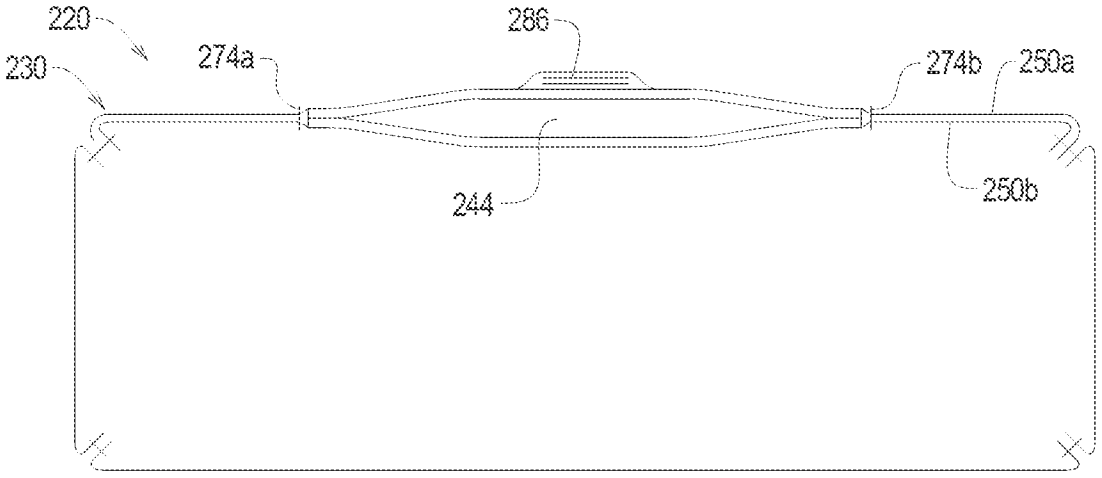
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FIG. 16

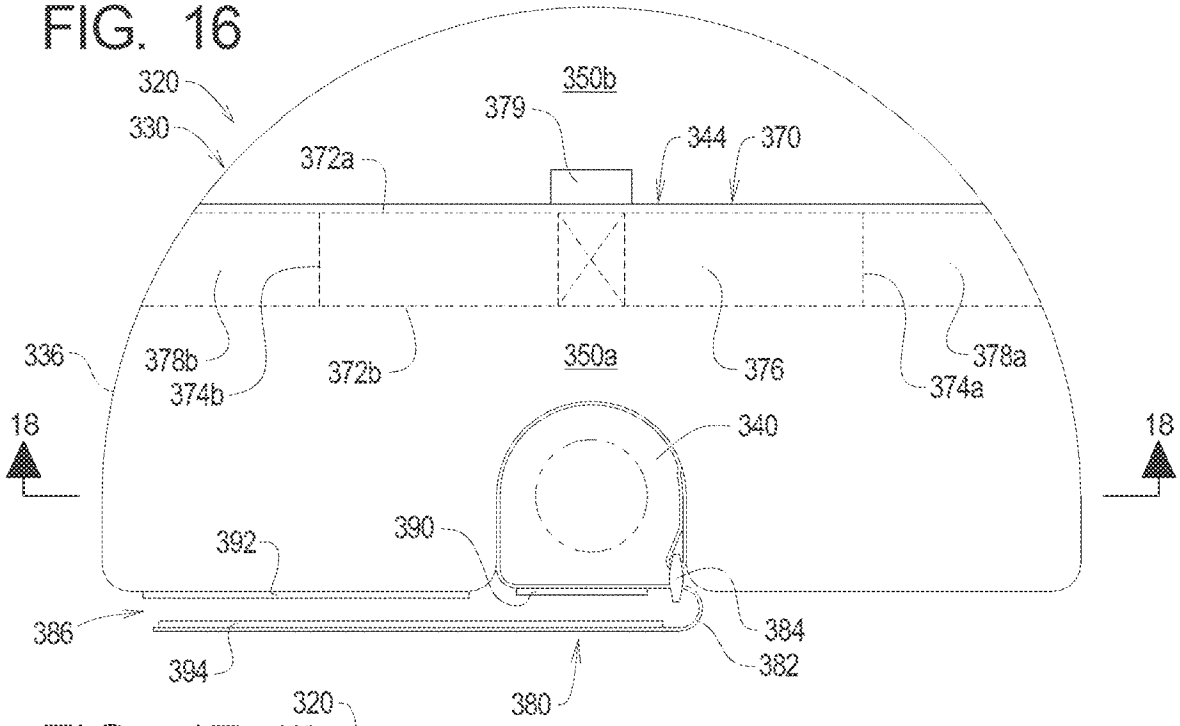


FIG. 17

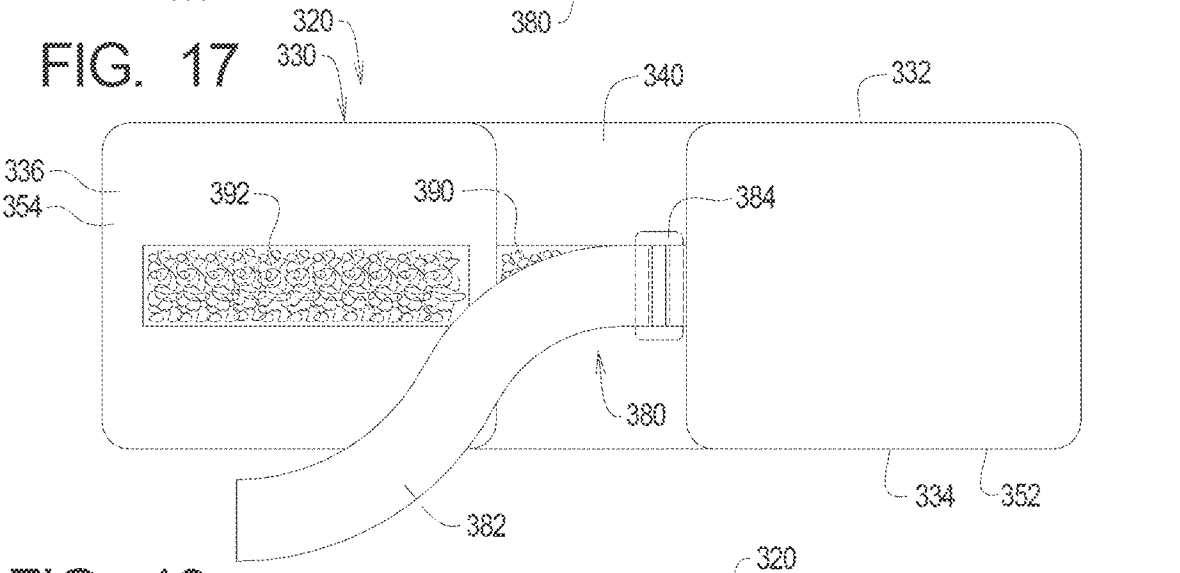
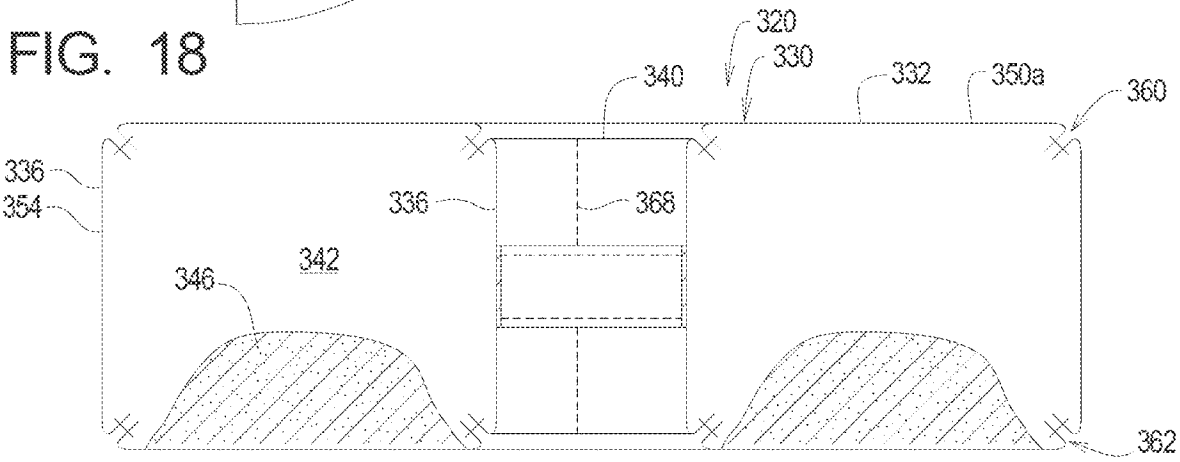


FIG. 18



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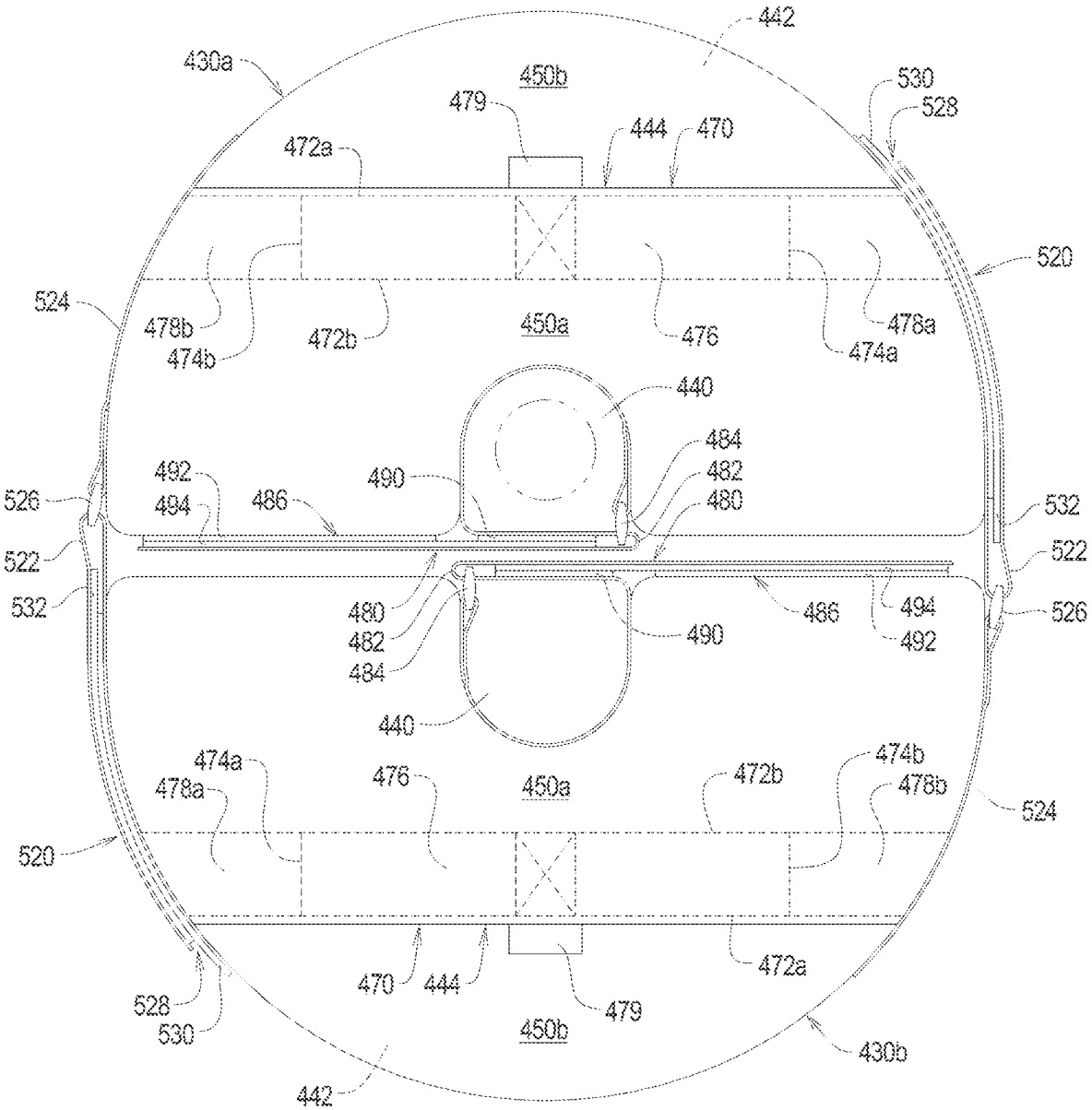
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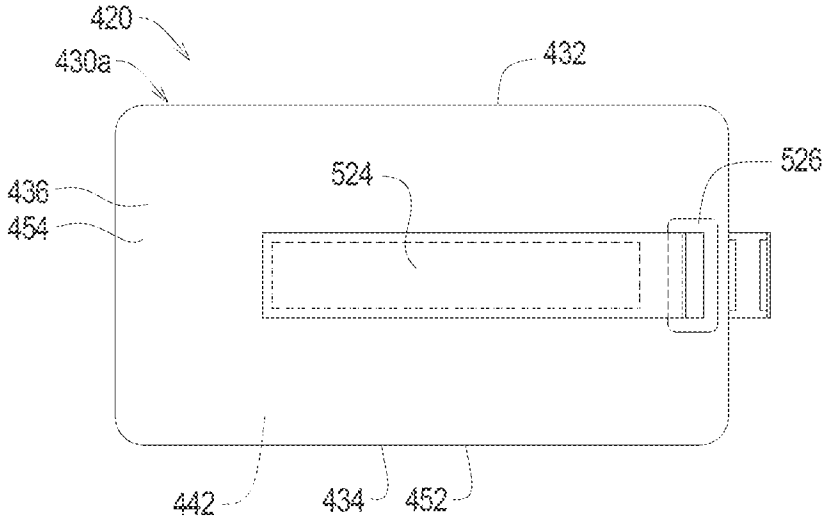
FIG. 20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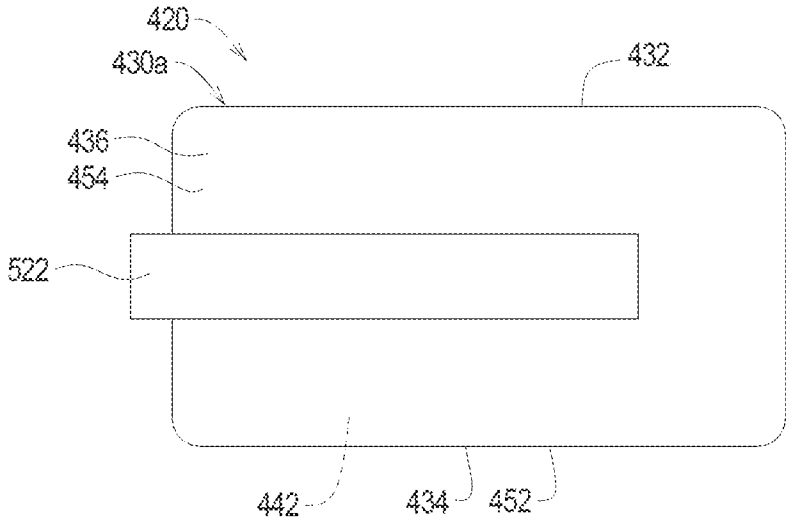
434
452

FIG. 21


420
430a
432
436
454
522
442
434
452

WEIGHT SYSTEMS AND METHODS STABILIZING OBJECTS

RELATED APPLICATIONS

This application, U.S. patent application Ser. No. 16/860,815 filed Apr. 28, 2020 is a continuation of U.S. patent application Ser. No. 16/578,054 filed Sep. 20, 2019, now U.S. Pat. No. 10,633,882, which issued on Apr. 28, 2020.

U.S. patent application Ser. No. 16/578,054 is a continuation of U.S. patent application Ser. No. 16/216,810 filed Dec. 11, 2018, now U.S. Pat. No. 10,472,846, which issued on Nov. 12, 2019.

U.S. patent application Ser. No. 16/216,810 is a continuation of U.S. patent application Ser. No. 15/461,160 filed Mar. 16, 2017, now U.S. Pat. No. 10,151,121 which issued on Dec. 11, 2018.

U.S. patent application Ser. No. 15/461,160 is a continuation of U.S. patent application Ser. No. 15/273,494 filed Sep. 22, 2016, now U.S. Pat. No. 10,087,647, which issued on Oct. 2, 2018.

U.S. patent application Ser. No. 15/273,494 claims benefit of U.S. Provisional Application Ser. No. 62/390,096, filed on Mar. 21, 2016.

The contents of all applications listed above are incorporated herein by reference.

TECHNICAL FIELD

The present invention relates to free-standing objects and, more specifically, to weight systems and methods for counteracting tipping forces on portable, free-standing objects.

BACKGROUND

The present invention is of particular significance when applied to umbrella systems, and that application of the present invention will be described herein in detail. However, the principles of the present invention may be applied to other portable, free-standing objects such as patio heaters, patio lighting, traffic or construction cones, and the like. The scope of the present invention should thus be determined based on the claims appended hereto and not the following detailed descriptions of examples of the present invention as applied to free-standing umbrellas.

Umbrellas have long been used to provide protection from sun or rain. At its most basic, an umbrella typically comprises a pole, canopy rods supported by the pole, and a canopy supported by the canopy rods. The canopy rods are typically pivotably supported by the pole such that the umbrella may be reconfigured from a storage configuration in which the canopy rods are parallel to the pole and a use configuration in which the canopy rods radially extend from the pole. A form factor of the canopy in the storage configuration is much smaller than in the use configuration. Certain umbrellas further comprise a collapsible pole that allows an effective length of the umbrella to be altered between the storage configuration and the use configuration.

While many umbrellas are designed to be carried when in the use configuration, one class of umbrellas, referred to herein as free-standing umbrellas, is designed to be supported by the ground. Free-standing umbrellas are commonly used to provide protection from rain or sun on outdoor patios and seating areas for commercial bistros and the like.

The pole of a free-standing umbrella is designed to engage the ground directly or to be supported by a base that in turn engages the ground. In either scenario, the umbrella is supported by the ground rather than carried. The manner in which the pole and/or base engage the ground should also counteract tipping forces applied to the umbrella during normal use.

To support a free-standing umbrella in an upright position, the pole may be driven, augered, or otherwise inserted into the ground at a desired location. More commonly, however, a weighted base is provided that is supported on top of the ground. The umbrella pole is inserted into a base stem, and the weight of the base is intended to act on the pole through the stem to prevent tipping of the umbrella during normal use.

The base is often made out of a heavy material such as stone. To minimize shipping costs, the base may take the form of a hollow container that may be shipped empty and filled with a material such as sand or water at the time of use. However, the weight of a conventional base is insufficient to prevent tipping of the umbrella in many situations, such as during heavy winds.

To supplement the weight of the base of a conventional free-standing umbrella, additional weighted material may be placed on top of the base. For example, flexible fabric containers that may be manufactured and shipped inexpensively may be filled with sand at the point of installation of the umbrella and placed on top of the umbrella base.

The need exists for improved fabric containers for providing supplemental weight to a conventional umbrella base.

SUMMARY

The present invention may be embodied as a weight system for containing fill material for supporting a free-standing object comprising a container and a closure system. The container defines an interior chamber adapted to contain the fill material and comprises first and second upper wall panels made of flexible fabric. The second upper wall panel is supported relative to the first upper wall panel to define a fill opening sized and configured to allow fill material to be introduced into the interior chamber. The closure system comprising first and second closure portions. The first closure portion is configured to be engaged with the second closure portion to arrange the closure system in a closed configuration. The first closure portion is configured to be at least partly disengaged from the second closure portion to arrange the closure system in an open configuration. The first closure portion is supported by the first upper wall panel to define a first side of the fill opening. The second closure portion is supported by the second upper wall panel to define a second side of the fill opening. With the closure system arranged in the closed configuration, fill material is substantially prevented from passing through the fill opening. With the closure system arranged in the open configuration, fill material may pass through the fill opening. The first and second wall panels support the first and second closure portions, respectively, such that the closure system is arranged above fill material within the interior chamber of the container and at least one of the first and second upper wall panels may be displaced in a direction away from fill material within the interior chamber when the closure system is in the open configuration to facilitate passing of fill material through the fill opening.

The present invention may also be embodied as a weight system for containing fill material for supporting a free-standing object comprising a container and a closure system. The container defines an interior chamber adapted to contain the fill material. The container comprises a plurality of walls

made of flexible fabric. At least one wall is an upper wall configured such that displacement of at least a portion of the upper wall defines a fill opening. The closure system comprises first and second closure portions. The first closure portion is arranged to define a first side of the fill opening. The second closure portion is arranged to define a second side of the fill opening. The closure system is arranged to allow the container to be configured in a closed configuration and an open configuration. In the closed configuration, the first closure portion engages the second closure portion substantially to prevent access to the interior chamber through the fill opening. In the open configuration, the first closure portion is disengaged from the second closure portion to allow access to the interior chamber through the fill opening. When the flexible fabric defining the upper wall is substantially planar, the fill opening and the closure system defined by the first and second closure portions are substantially within a plane defined by the upper wall. The upper wall is displaced relative to the side wall to reconfigure the container between the open configuration and the closed configuration in a direction away from fill material within the interior chamber of the container.

The present invention may be embodied as a weight system for containing fill material to support a free-standing object comprising a flexible lower wall, a flexible upper wall, and a closure system. The flexible upper wall comprises at least a first upper wall panel and a second upper wall panel. The closure system comprising first and second closure portions. The first closure portion is operatively connected to the first upper wall panel. The second closure portion is operatively connected to the second upper wall panel. The upper wall and the lower wall are joined to form a container defining an interior chamber and a fill opening. The closure system is arranged to allow the container to be configured in a closed configuration and an open configuration. In the closed configuration, the first closure portion is arranged on a first side of the fill opening, the second closure portion is arranged on a second side of the fill opening, and the first closure portion engages the second closure portion substantially to prevent access to the interior chamber through the fill opening. In the open configuration, the first closure portion is disengaged from the second closure portion to allow access to the interior chamber through the fill opening. The closure system is supported at least in part by the upper wall such that fill material within the interior chamber is below the closure system. The flexible upper wall is configured such that at least an overlap portion of the flexible upper wall is arranged over the first and second closure portions when the closure system is in the closed configuration. The closure system and the overlap portion inhibit passage of the fill material from the interior chamber through the fill opening when the closure system is in the closed configuration.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front elevation view of a first example weight system illustrated with a first example umbrella system;

FIG. **2** is a section view taken along lines **2-2** in FIG. **1**;

FIG. **3** is a side elevation view of the first example weight system illustrated with a second example umbrella system;

FIG. **4** is a section view taken along lines **4-4** in FIG. **3**;

FIG. **5** is a top plan view of the first example weight system;

FIG. **6** is a section view taken along lines **6-6** in FIG. **5**;

FIG. **7** is a detail of a portion of FIG. **6**;

FIG. **8** is a section view taken along lines **8-8** in FIG. **5**;

FIG. **8**A is a detail of a portion of FIG. **8**;

FIG. **9**A is a section view taken along lines **9**A-**9**A in FIG. **5** illustrating the first example weight container of the first example weight system in a closed configuration;

FIG. **9**B is a section view similar to FIG. **9**A illustrating the first example weight container of the first example weight system in an open configuration;

FIG. **10** is a top plan view of a second example weight system;

FIG. **11** is a front elevation view of the second example weight system;

FIG. **12** is a section view taken along lines **12-12** in FIG. **10**;

FIG. **13** is a detail of a portion of FIG. **12**;

FIG. **14** is a section view taken along lines **14-14** in FIG. **10** illustrating a second example weight container of the second example weight system in a closed configuration;

FIG. **15** is a section view similar to FIG. **14** illustrating the second example weight container of the second example weight system an open configuration;

FIG. **16** is a top plan view of a third example weight system;

FIG. **17** is a front elevation view of the third example weight system;

FIG. **18** is a section view taken along lines **18-18** in FIG. **16**;

FIG. **19** is a top plan view of a fourth example weight system;

FIG. **20** is a first side elevation view of a first example weight container of the fourth example weight system; and

FIG. **21** is a second side elevation view of the first example weight container the fourth example weight system.

DETAILED DESCRIPTION

The present invention may be embodied in several different forms, and several examples of different embodiments of the present invention will be separately described herein.

I. First Embodiment

Referring initially to FIGS. **1-4** of the drawing, depicted therein is a first example weight system **20** constructed in accordance with, and embodying, the principles of the present invention. In FIGS. **1** and **2**, the first example weight system **20** is shown being used to stabilize a first example umbrella system **22**. In FIGS. **3** and **4**, the first example weight system **20** is shown being used to stabilize a second example umbrella system **24**.

As shown **5-9**, the details of the first example weight system **20** will be described in further detail. The first example weight system **20** comprises a weight container **30** defining an upper wall **32**, a lower wall **34**, an outer side wall **36**, and an inner side wall **38**. The example upper and lower walls **32** and **34** are flat and disc-shaped, while the outer and inner side walls **36** and **38** are cylindrical. The first example weight system **20** further defines a through hole **40** and an interior chamber **42**. A fill opening **44** is formed in the upper wall **32** through which fill material **46** is placed into the interior chamber **42**.

The first example weight system **20** comprises first and second upper panels **50***a* and **50***b* defining the upper wall **32**, a lower panel **52** defining the lower wall **34**, an outer side panel **54** defining the outer side wall **36**, and an inner side panel **56** defining the inner side wall **38**. The example panels **50***a*, **50***b*, **52**, **54**, and **56** are made of a flexible fabric capable

of containing the fill material **46** and bearing the weight fill material **46** when the weight container **30** is filled with the fill material **46** as will be described in further detail herein. The example first and second upper panels **50***a* and **50***b* are joined to the outer side panel **54** by a first upper seam **60**. The example first and second upper panels **50***a* and **50***b* are joined to the inner side panel **56** by a second upper seam **62**. The example lower panel **52** is joined to the outer side panel **54** by a first lower seam **64**. The example lower panel **52** is also joined to the inner side panel **56** by a second lower seam **66**. A first vertical seam **68***a* joins ends of the outer panel **54** to form the outer side wall **36**, and a second vertical seam **68***b* joins ends of the inner panel **56** to form the inner side wall **38**.

The example first upper panel **50***a* defines an axial hole. A first outer edge of the example first upper panel **50***a* extends partly along a first circular path defining a first diameter. An inner edge of the example first upper panel **50***a* extends along a second circular path defining a second diameter. The length of the second diameter is approximately one tenth of the length of the first diameter. An overlap edge of the example first upper panel **50***a* intersects the first circular path at first and second intersection points. The example first upper panel **50***a* extends along approximately 245 degrees of the first circular path (e.g., between the first and second intersection points defined by the first overlap edge).

The example second upper panel **50***b* defines a second outer edge that also extends partly along the first circular path. A second overlap edge defined by the example second upper panel **50***b* intersects the first circular path at third and fourth intersection points. The example second upper panel **50***b* extends along approximately 140 degrees of the first circular path (e.g., between the third and fourth intersection points defined by the second overlap edge).

Given that the example first upper panel **50***a* extends along approximately 245 degrees of the first circular path and the example second upper panel **50***b* extends along approximately 140 degrees of the first circular path, the example first and second panels **50***a* and **50***b* overlap in an overlap region **70**. The example overlap region intersects the first circular path at first and second intersection locations, with each intersecting location extending along approximately 12.5 degrees of the first circular path.

The example first and second upper panels **50***a* and **50***b* are sewn together by the first upper seam **60** within the intersecting locations. The example first and second upper panels **50***a* and **50***b* are further sewn at least partly together by first and second chord stitches **72***a* and **72***b* and first and second end stitches **74***a* and **74***b*. The example first chord stitch **72***a* extends along a line extending between the first and second intersection points, while the example second chord stitch **72***b* extends along a line extending between the second and third intersection points. The example first and second chord stitches **72***a* and **72***b* are parallel to each other. The end stitches **74***a* and **74***b* extend between the first and second chord stitches **72***a* and **72***b* at points that are approximately one fifth of the length of the chords defined by the first and second chord stitches **72***a* and **72***b* from the first and second intersection locations. The example end stitches **74***a* and **74***b* are parallel to each other.

The example chord stitches **72***a* and **72***b* and the example end stitches **74***a* and **74***b* divide the overlap region into a middle portion **76** and first and second end portions **78***a* and **78***b*. Outside of the middle portion **76**, the chord stitches **72***a* and **72***b* join the first and second upper panels **50***a* and **50***b* together. Within the middle portion **76**, the chord stitches **72***a* and **72***b* do not join the first and second upper panels **50***a* and **50***b* together but simply form seams to finish the edges of the first and second upper panels **50***a* and **50***b*. In particular, the example first chord stitch **72***a* forms a seam edge of the example first upper panel **50***a*, while the example second chord stitch **72***b* forms a seam edge of the example second upper panel **50***b*.

Accordingly, the first and second upper panels **50***a* and **50***b* are effectively sealed together in the first and second end portions **78***a* and **78***b*, but the fill opening **44** is defined between the first and second upper panels **50***a* and **50***b* within the middle portion **76**.

Referring now to FIGS. **8** and **8**A, it can be seen that a closure system **80** is arranged to detachably attach the first and second upper panels **50***a* and **50***b* within the middle portion **76** to close the fill opening **44**. The example closure system **80** is a hook and loop system, but other closure systems such as lacing, a zipper, or the like may be used in addition or instead. If the closure system used is not a hook and loop system (e.g., uses a zipper and/or laces), the first and second upper panels **50***a* and **50***b* need not overlap. Instead the fill opening **44** may be formed by may be joined at seams formed by edges of the respective panels **50***a* and **50***b*, with the zipper and/or laces joining the panels **50***a* and **50***b* together at the adjacent seams. However, the use of overlapping panels **50***a* and **50***b* creates a finished look that also allows the closure system (hook and loop, zipper, and/or laces) to be hidden from view during normal use of the example container **30** as part of the example weight system **20**.

The example hook and loop system forming the closure system **80** comprises a loop panel **82** secured to the first upper panel **50***a* within the middle portion **76** and a hook panel **84** secured to the second upper panel **50***b*, also within the middle portion **76**. The loop panel **82** overlaps the hook panel **84** to effectively seal the first and second upper panels **50***a* and **50***b* together. More specifically, when the loop panel **82** is attached to the hook panel **84** as shown in FIGS. **8** and **9**A, the weight container **30** is in a closed configuration in which access to the interior chamber **42** through the fill opening **44** is prevented. When the loop panel **82** is detached from the hook panel **84** as shown in FIGS. **8**A and **9**B, the weight container **30** is in an open configuration in which access to the interior chamber **42** is allowed through the fill opening **44**. The fill material **46** may be poured or otherwise passed through the fill opening **44** in the open configuration to allow the interior chamber **42** to be filled and/or emptied. A tab **86** may be secured to the first upper panel **50***a* to facilitate detachment of the hook panel **84** from the loop panel **82** and thus placement of the weight container **30** in the open configuration.

FIG. **7** illustrates a detail of the example first upper seam **60**. The detail of FIG. **7** applies to all of the example second upper seam **62**, first lower seam **64**, and second lower seam **66**, and only the example first upper seam **60** will be described herein in detail.

In particular, FIG. **7** illustrates that the example weight container **30** further comprises an edge panel **90**. As shown in FIG. **7**, the first upper panel **50***a* defines a first edge **92** and the outer side panel **54** defines a second edge **94**. To form the example first upper seam **60**, the first and second edges **92** and **94** are sewn together using a double stitch **96**. After the double stitch **96** is formed, the edge panel **90** is folded over the first and second edges **92** and **94**. The edge panel **90** is then sewn to the first and second edges **92** and **94** by a single stitch **98** that extends through one portion of the edge panel **90**, the first edge **92**, the second edge **94**, and a second

portion of the edge panel **90**. The edge panel **90** is formed of thick strapping or other strong, flexible fabric material capable of reinforcing the first upper seam **60** and also of inhibiting the passage of the fill material **46** out of the interior chamber **42** through this seam **60**.

To fill the weight container **30**, the hook panel **84** is disengaged from the loop panel **82** to place the weight container **30** in its open configuration. In this open configuration, the fill material **46** is poured or otherwise passed through the fill opening **44** until a desired amount of fill material **46** is within the interior chamber **42**. During normal use of the first example weight system **20**, the hook panel **84** engages the loop panel **82** substantially to prevent the fill material **46** from being displaced out of the interior chamber **42** through the fill opening **44**. The weight container **30** may be arranged in a desired relationship to the item to be supported prior to introduction of the fill material **46** into the interior chamber **42** to minimize carrying of the fully loaded weight container **30**.

While a number of materials may be used to satisfy the functional requirements of the example weight container **30**, the following materials have been determined to provide a good balance of functionality and cost.

The material forming the example panels **50***a*, **50***b*, **52**, **54**, and **56** is a polyester fabric. The example polyester fabric used is a 600D×600D rip stop polyester, cross hatch ⅝" grid at 300 grams per square yard, with a PVC lining facing the interior chamber **42**. This panel material is waterproof, inhibits separation along all edges of the weight container **30**, and inhibits migration of the fill material **46** through the fabric forming the **50***a*, **50***b*, **52**, **54**, and **56**.

The example thread used to form the seams **60**, **62**, **64**, **66**, **68***a*, and **68***b*, stitches **72***a*, **72***b*, **74***a*, **74***b*, **96**, and **98**, and to secure the loop panel **82** and hook panel **84** to the panels **50***a* and **50***b* is polyester thread. The example polyester thread is #606 polyester heavy duty thread.

The example loop panel **82** and hook panel **84** are 2.0" polyester hook and loop material (e.g., VELCRO™) class level A.

The example tab **86** is formed of polyester webbing. The polyester webbing forming the example tab **86** is 1.5" polyester webbing.

The example edge panel **90** is formed by polyester bias tape. The example polyester bias tape forming the example edge panel **90** is ⅞" polyester bias tape with flat press finish at 6.5 grams per yard.

Referring now again to FIGS. **1** and **3**, the first and second example umbrella systems **22** and **24** will be described in further detail to illustrate several examples of use of the example weight systems described herein. The umbrella systems **22** and **24** are or may be conventional and are described herein only to that extent helpful to a complete understanding of the use of the present invention.

The first example umbrella system **22** comprises a base assembly **120**, a pole assembly **122**, and a canopy assembly **124**. The base assembly **120** comprises a base structure **130**, a base stem **132**, and a base lock **134**. The pole assembly **122** comprises a lower pole **140**, an upper pole **142**, a tilt assembly **144**, and a crank assembly **146**. The canopy assembly **124** comprises canopy rods **150** and a canopy **152** formed of flexible material.

The base structure **130** defines a lower surface that engages the ground and an upper surface. The base stem **132** extends upwards from the upper surface of the base structure **130**. The lower pole **140** is received by the base stem **132**. The tilt assembly **144** connects the upper pole **142** to lower pole **140** such that an angle of the upper pole **142** with respect to the lower pole **140** may be changed. The canopy rods **150** are pivotably supported by the upper pole **142**, and operation of the crank assembly **146** moves the canopy rods **150** between retracted and extended positions.

To use the first example weight system **20** to support the first example umbrella system **22**, the base assembly **120** is arranged at a desired location. The weight container **30** is then arranged such that the base stem **132** of the base structure **130** extends through the through hole **40** in the weight container **30** and the lower wall **34** of the weight container **30** rests on the upper surface of the base structure **130**. The weight container **30** is placed in its open configuration, and the desired amount of fill material **46** is arranged within the interior chamber **42** through the fill opening **44**. The weight container **30** is then placed in its closed configuration. At this point, the weight of the weight container **30** and the fill material **46** contained by the weight container **30** will apply a downward force on the base structure **130**.

The desired amount of fill material **46** will depend upon the nature of the fill material and the specifics of the first example umbrella system **22**. The fill material **46** may be placed into the interior chamber **42** before arranging the through hole **40** of the weight container **30** to receive the base stem **132**, but may require lifting and moving of the entire first example weight system **20**.

The second example umbrella system **24** comprises a base assembly **160**, a pole assembly **162**, and a canopy assembly **164**. The example base assembly **160** comprises a base structure **170** and a base stem **172**. The example base structure **170** comprises a forward leg **174**, a rear leg **176**, and first and second transverse legs **178***a* and **178***b*. The pole assembly **162** comprises a lower pole **180**, an upper pole **182**, a pivot support **184**, a tilt assembly **186**, and a crank assembly **188**. The canopy assembly **164** comprises canopy rods **190** and a canopy **192** formed of flexible material.

The legs **174**, **176**, **178***a*, and **178***b* define lower surfaces that engages the ground and upper surfaces. The base stem **172** extends upwards from the base structure **170** at the intersection of the legs **174**, **176**, **178***a*, and **178***b*. The lower pole **180** is received by the base stem **172**. The tilt assembly **186** connects the upper pole **182** to lower pole **180** such that an angle of the upper pole **182** with respect to the lower pole **180** may be changed and such that the upper pole **182** extends from the lower pole **180**. The canopy rods **190** are pivotably supported by the upper pole **182**, and operation of the crank assembly **188** moves the canopy rods **190** between retracted and extended positions.

To use the first example weight system **20** to support the second example umbrella system **24**, the base assembly **160** is arranged at a desired location. The weight container **30** is then arranged such that the base stem **172** of the base structure **170** extends through the through hole **40** in the weight container **30** and the lower wall **34** of the weight container **30** rests on the upper surfaces of at least some of the legs **174**, **176**, **178***a*, and **178***b*. The weight container **30** is placed in its open configuration, and the desired amount of fill material **46** is arranged within the interior chamber **42** through the fill opening **44**. The weight container **30** is then placed in its closed configuration. At this point, the weight of the weight container **30** and the fill material **46** contained by the weight container **30** will apply a downward force on the base structure **160**.

The desired amount of fill material **46** will depend upon the nature of the fill material and the specifics of the second example umbrella system **24**. The fill material **46** may be placed into the interior chamber **42** before arranging the through hole **40** of the weight container **30** to receive the

base stem **172**, but may require lifting and moving of the entire first example weight system **20**.

Although the example weight container **30** is substantially round in top plan view and forms a hollow cylinder, other shapes may be used, several examples of which are described elsewhere in this application.

II. Second Embodiment

Referring now to FIGS. **10-15** of the drawing, depicted therein is a second example weight system **220** constructed in accordance with, and embodying, the principles of the present invention. The second example weight system **220** comprises a weight container **230** defining an upper wall **232**, a lower wall **234**, an outer side wall **236**, and an inner side wall **238**. The example upper and lower walls **232** and **234** are flat and rectangular (square), the outer side wall **236** comprises four flat segments, and the inner side wall **238** is cylindrical. The second example weight system **220** further defines a through hole **240** and an interior chamber **242**. A fill opening **244** is formed in the upper wall **232** through which fill material **246** is placed into the interior chamber **242**.

The second example weight system **220** comprises first and second upper panels **250***a* and **250***b* defining the upper wall **232**, a lower panel **252** defining the lower wall **234**, an outer side panel **254** defining the outer side wall **236**, and an inner side panel **256** defining the inner side wall **238**. The example panels **250***a*, **250***b*, **252**, **254**, and **256** are made of a flexible fabric capable of containing the fill material **246** and bearing the weight fill material **246** when the weight container **230** is filled with the fill material **246** as will be described in further detail herein. The example first and second upper panels **250***a* and **250***b* are joined to the outer side panel **254** by a first upper seam **260**. The example first and second upper panels **250***a* and **250***b* are joined to the inner side panel **256** by a second upper seam **262**. The example lower panel **252** is joined to the outer side panel **254** by a first lower seam **264**. The example lower panel **252** is also joined to the inner side panel **256** by a second lower seam **266**. A first vertical seam **268***a* joins ends of the outer side panel **254** to form the outer side wall **236**, and a second vertical seam **268***b* joins ends of the inner panel **256** to form the inner side wall **238**. The example first upper seam **260**, second upper seam **262**, first lower seam **264**, and second lower seam **266** may be constructed in the same manner as the example first upper seam **60** described above and will not be described herein in further detail.

The example first upper panel **250***a* defines an axial hole. A first outer edge of the example first upper panel **250***a* extends partly along a segmented path. An inner edge of the example first upper panel **250***a* extends along a circular path defining a diameter. The length of the diameter is approximately one tenth of the length between opposing sides of the first upper panel **250***a*. A first overlap edge of the example first upper panel **250***a* intersects the segmented path defined by the first upper panel **250***a* at first and second intersection points. The first overlap edge of the example first upper panel **250***a* is offset from the axial hole.

The example second upper panel **250***b* defines a second outer edge that also extends partly along the segmented path. A second overlap edge defined by the example second upper panel **250***b* intersects the segmented path at third and fourth intersection points. When the example weight container **230** is assembled, the third and fourth intersection points defined by the second overlap edge are arranged between a line extending between the first and second intersection points and the axial hole defined by the first upper panel **250***a*.

With the foregoing construction, the second overlap edge defined by the second upper panel **250***b* is arranged between the first overlap edge and the through hole **240**. Accordingly, the example first and second panels **250***a* and **250***b* overlap in an overlap region **270**. The example overlap region intersects the segmented path at first and second intersection locations.

The example first and second upper panels **250***a* and **250***b* are sewn together by the first upper seam **260** within the intersecting locations. The example first and second upper panels **250***a* and **250***b* are further sewn at least partly together by first and second lateral stitches **272***a* and **272***b* and first and second end stitches **274***a* and **274***b*. The example first lateral stitch **272***a* extends along a line extending between the first and second intersection points, while the example second lateral stitch **272***b* extends along a line extending between the second and third intersection points. The example first and second lateral stitches **272***a* and **272***b* are parallel to each other. The example end stitches **274***a* and **274***b* extend between the first and second lateral stitches **272***a* and **272***b* at points that are approximately one fifth of the length of the chords defined by the first and second lateral stitches **272***a* and **272***b* from the first and second intersection locations. The example end stitches **274***a* and **274***b* are parallel to each other.

The example lateral stitches **272***a* and **272***b* and the example end stitches **274***a* and **274***b* divide the overlap region into a middle portion **276** and first and second end portions **278***a* and **278***b*. Outside of the middle portion **276**, the lateral stitches **272***a* and **272***b* join the first and second upper panels **250***a* and **250***b* together. Within the middle portion **276**, the lateral stitches **272***a* and **272***b* do not join the first and second upper panels **250***a* and **250***b* together but simply form seams to finish the edges of the first and second upper panels **250***a* and **250***b*. In particular, the example first lateral stitch **272***a* forms a seam edge of the example first upper panel **250***a*, while the example second lateral stitch **272***b* forms a seam edge of the example second upper panel **250***b*.

Accordingly, the first and second upper panels **250***a* and **250***b* are effectively sealed together in the first and second end portions **278***a* and **278***b*, but the fill opening **244** is defined between the first and second upper panels **250***a* and **250***b* within the middle portion **276**.

Referring more specifically to FIGS. **12** and **13**, it can be seen that a closure system **280** is arranged to detachably attach the first and second upper panels **250***a* and **250***b* within the middle portion **276** to close the fill opening **244**. The example closure system **280** is a hook and loop system, but other closure systems such as lacing, a zipper, or the like may be used in addition or instead. If the closure system used is not a hook and loop system (e.g., a zipper or laces), the first and second upper panels **250***a* and **250***b* need not overlap. Instead the fill opening **244** may be formed by may be joined at seams formed by edges of the respective panels **250***a* and **250***b*, with the zipper and/or laces joining the panels **250***a* and **250***b* together at the adjacent seams.

The example hook and loop system forming the closure system **280** comprises a loop panel **282** secured to the first upper panel **250***a* within the middle portion **276** and a hook panel **284** secured to the second upper panel **250***b* within the middle portion **276**. The loop panel **282** overlaps the hook panel **284** to effectively seal the first and second upper panels **250***a* and **250***b* together. More specifically, when the loop panel **282** is attached to the hook panel **284** as shown

in FIGS. **12** and **14**, the weight container **230** is in a closed configuration in which access to the interior chamber **242** through the fill opening **244** is prevented. When the loop panel **282** is detached from the hook panel **284** as shown in FIGS. **13** and **15**, the weight container **230** is in an open configuration in which access to the interior chamber **242** is allowed through the fill opening **244**. The fill material **246** may be poured or otherwise passed through the fill opening **244** in the open configuration to allow the interior chamber **242** to be filled and/or emptied. A tab **286** may be secured to the first upper panel **250***a* to facilitate detachment of the hook panel **284** from the loop panel **282** and thus placement of the weight container **230** in the open configuration.

To fill the weight container **230**, the hook panel **284** is disengaged from the loop panel **282** to place the weight container **230** in its open configuration. In this open configuration, the fill material **246** is poured or otherwise passed through the fill opening **244** until a desired amount of fill material **246** is within the interior chamber **242**. During normal use of the second example weight system **220**, the hook panel **284** engages the loop panel **282** substantially to prevent the fill material **246** from being displaced out of the interior chamber **242** through the fill opening **244**. The weight container **230** may be arranged in a desired relationship to the item to be supported prior to introduction of the fill material **246** into the interior chamber **242** to minimize carrying of the fully loaded weight container **230**.

While a number of materials may be used to satisfy the functional requirements of the second example weight container **230**, the materials described above with respect to the first example weight container **30** have been determined to provide a good balance of functionality and cost and may also be used to form like components of the second example container **230**.

The second example weight system **220** may be used to support either of the first and second example umbrella systems **22** and **24** or possibly other upright items such as construction or traffic cones, light poles, portable pole mounted heaters, or the like.

To use the second example weight system **220** to support the first example umbrella system **22**, the base assembly **120** is arranged at a desired location. The weight container **230** is then arranged such that the base stem **132** of the base structure **130** extends through the through hole **240** in the weight container **230** and the lower wall **234** of the weight container **230** rests on the upper surface of the base structure **130**. The weight container **230** is placed in its open configuration, and the desired amount of fill material **246** is arranged within the interior chamber **242** through the fill opening **244**. The weight container **230** is then placed in its closed configuration. At this point, the weight of the weight container **230** and the fill material **246** contained by the weight container **230** will apply a downward force on the base structure **130**.

The desired amount of fill material **246** will depend upon the nature of the fill material and the specifics of the first example umbrella system **22**. The fill material **246** may be placed into the interior chamber **242** before arranging the through hole **240** of the weight container **230** to receive the base stem **132**, but may require lifting and moving of the entire second example weight system **220**.

To use the second example weight system **220** to support the second example umbrella system **22**, the base assembly **160** is arranged at a desired location. The weight container **230** is then arranged such that the base stem **172** of the base structure **170** extends through the through hole **240** in the weight container **230** and the lower wall **234** of the weight container **230** rests on the upper surfaces of at least some of the legs **174**, **176**, **178***a*, and **178***b*. The weight container **230** is placed in its open configuration, and the desired amount of fill material **246** is arranged within the interior chamber **242** through the fill opening **244**. The weight container **230** is then placed in its closed configuration. At this point, the weight of the weight container **230** and the fill material **246** contained by the weight container **230** will apply a downward force on the base structure **160**.

The desired amount of fill material **246** will depend upon the nature of the fill material and the specifics of the second example umbrella system **24**. The fill material **246** may be placed into the interior chamber **242** before arranging the through hole **240** of the weight container **230** to receive the base stem **172**, but may require lifting and moving of the entire second example weight system **220**.

Although the example weight container **230** is substantially square in top plan view and forms rectangular solid with a central hole, other shapes may be used, several examples of which are described elsewhere in this application.

III. Third Embodiment

Referring now to FIGS. **16-18** of the drawing, depicted therein is a third example weight system **320** constructed in accordance with, and embodying, the principles of the present invention. The third example weight system **320** comprises a weight container **330** defining an upper wall **332**, a lower wall **334**, and a side wall **336**. The example upper and lower walls **332** and **334** are flat and semi-circular but could be rectangular or other shapes. The example side wall **336** comprises a first semi-cylindrical segment, first and second flat segments, and a second semi-cylindrical segment. The diameter defined by the first semi-cylindrical segment is larger than that defined by the second semi-cylindrical segment. Each of the first and second flat segments extends between the first and second semi-cylindrical segments. The third example weight system **320** further defines a notch **340** and an interior chamber **342**. A fill opening **344** is formed in the upper wall **332** through which fill material **346** is placed into the interior chamber **342**.

The third example weight system **320** comprises first and second upper panels **350***a* and **350***b* defining the upper wall **332**, a lower panel **352** defining the lower wall **334**, and a side panel **354** defining the side wall **336**. The example panels **350***a*, **350***b*, **352**, and **354** are made of a flexible fabric capable of containing the fill material **346** and bearing the weight fill material **346** when the weight container **330** is filled with the fill material **346** as will be described in further detail herein. The example first and second upper panels **350***a* and **350***b* are joined to the side panel **354** by an upper seam **360**. The example lower panel **352** is joined to the side panel **354** by a lower seam **362**. A vertical seam **368** joins ends of the side panel **354** to form the side wall **236**. The example upper seam **360** and lower seam **362** may be constructed in the same manner as the example first upper seam **60** described above and will not be described herein in further detail.

A first outer edge of the example first upper panel **350***a* extends along a portion of a segmented path defined by the side wall **336**. A first overlap edge of the example first upper panel **350***a* intersects the segmented path defined by the first upper panel **350***a* at first and second intersection points.

The example second upper panel **350***b* defines a second outer edge that also extends partly along the segmented path. A second overlap edge defined by the example second upper

panel **350***b* intersects the segmented path at third and fourth intersection points. When the example weight container **330** is assembled, the third and fourth intersection points defined by the second overlap edge are arranged between a line extending between the first and second intersection points and the notch **340**.

With the foregoing construction, the second overlap edge defined by the second upper panel **350***b* is arranged between the first overlap edge and the notch **340**. Accordingly, the example first and second panels **350***a* and **350***b* overlap in an overlap region **370**. The example overlap region intersects the segmented path at first and second intersection locations.

The example first and second upper panels **350***a* and **350***b* are sewn together by the first upper seam **360** within the intersecting locations. The example first and second upper panels **350***a* and **350***b* are further sewn at least partly together by first and second chord stitches **372***a* and **372***b* and first and second end stitches **374***a* and **374***b*. The example first chord stitch **372***a* extends along a line extending between the first and second intersection points, while the example second chord stitch **372***b* extends along a line extending between the second and third intersection points. The example first and second chord stitches **372***a* and **372***b* are parallel to each other. The example end stitches **374***a* and **374***b* extend between the first and second chord stitches **372***a* and **372***b* at points that are approximately one fifth of the length of the chords defined by the first and second chord stitches **372***a* and **372***b* from the first and second intersection locations. The example end stitches **374***a* and **374***b* are parallel to each other.

The example chord stitches **372***a* and **372***b* and the example end stitches **374***a* and **374***b* divide the overlap region into a middle portion **376** and first and second end portions **378***a* and **378***b*. Outside of the middle portion **376**, the chord stitches **372***a* and **372***b* join the first and second upper panels **350***a* and **350***b* together. Within the middle portion **376**, the chord stitches **372***a* and **372***b* do not join the first and second upper panels **350***a* and **350***b* together but simply form seams to finish the edges of the first and second upper panels **372***a* and **372***b*. In particular, the example first chord stitch **372***a* forms a seam edge of the example first upper panel **350***a*, while the example second chord stitch **372***b* forms a seam edge of the example second upper panel **350***b*.

Accordingly, the first and second upper panels **350***a* and **350***b* are effectively sealed together in the first and second end portions **378***a* and **378***b*, but the fill opening **344** is defined between the first and second upper panels **350***a* and **350***b* within the middle portion **376**.

A closure system (not visible) is arranged to detachably attach the first and second upper panels **350***a* and **350***b* within the middle portion **376** to close the fill opening **344**. The example closure system is, like the example closure systems **80** and **280** described above, a hook and loop system, but other closure systems such as lacing, a zipper, or the like may be used in addition or instead. If the closure system used is not a hook and loop system (e.g., a zipper or laces), the first and second upper panels **350***a* and **350***b* need not overlap. Instead the fill opening **344** may be formed by may be joined at seams formed by edges of the respective panels **350***a* and **350***b*, with the zipper and/or laces joining the panels **350***a* and **350***b* together at the adjacent seams.

The example hook and loop system forming the closure system of the third example weight assembly **320** comprises comprising a loop panel (not visible) secured to the first upper panel **350***a* within the middle portion **376** and a hook panel (not visible) secured to the second upper panel **350***b* within the middle portion **376**. The loop panel overlaps the loop panel to effectively seal the first and second upper panels **350***a* and **350***b* together. More specifically, when the loop panel is attached to the hook panel, the weight container **330** is in a closed configuration in which access to the interior chamber **342** through the fill opening **344** is prevented. When the loop panel is detached from the hook panel, the weight container **330** is in an open configuration in which access to the interior chamber **342** is allowed through the fill opening **344**. The fill material **346** may be poured or otherwise passed through the fill opening **344** in the open configuration to allow the interior chamber **342** to be filled and/or emptied. A tab **379** may be secured to the first upper panel **350***a* to facilitate detachment of the hook panel from the loop panel and thus placement of the weight container **330** in the open configuration.

To fill the weight container **330**, the hook panel is disengaged from the loop panel to place the weight container **330** in its open configuration. In this open configuration, the fill material **346** is poured or otherwise passed through the fill opening **344** until a desired amount of fill material **346** is within the interior chamber **342**. During normal use of the third example weight system **320**, the hook panel engages the loop panel substantially to prevent the fill material **346** from being displaced out of the interior chamber **342** through the fill opening **344**. The weight container **330** may be arranged in a desired relationship to the item to be supported prior to introduction of the fill material **346** into the interior chamber **342** to minimize carrying of the fully loaded weight container **330**.

The third example weight system **320** further comprises a securing system **380** comprising a pole strap **382**, a pole ring **384**, and a fastening system **386**. The pole strap **382** is secured to the side panel **354** such that the first pole strap **382** extends from the weight container **330** adjacent to the notch **340**. In particular, a fixed end portion of the pole strap **382** is secured to the side panel **354** within the notch **340** such that a free end portion of the strap extends from the weight container **330** such that the free end portion strap can be extended from the first flat segment of the side wall **336** to the second flat segment of the side wall **336** across the notch **340**. The fixed end portion of the pole strap **382** is further inserted through a portion of the pole ring **384** and sewn back to itself such that the pole ring **384** is at the juncture of the second or inner semi-cylindrical segment of the side wall **336** defining the notch **340** and the second flat segment of the side wall **336**. The free end portion of the pole strap **382** may thus be extended across the notch **340** and through the pole ring **384** to secure the pole strap **382** across the notch **340**.

The pole strap **382** may be simply tied to itself to hold the pole strap **382** in place across the notch **340**. However, the fastening system **386** may be used to secure the pole strap **382** relative to the pole ring **384** when the pole strap **382** is extended through the pole ring **384**. The example fastening system **386** comprises a first loop portion **390** secured to the free end portion of the pole strap **382**, an optional second loop portion **392** secured to the first flat segment of the side wall **336**, and a hook portion **394** secured to the free end portion of the pole strap **382**. With the free end portion extended through the pole ring **384** as shown in FIGS. **16** and **17**, the first loop portion **390** and the hook portion **394** face each other and can be detachably attached to prevent inadvertent movement of the pole strap **382** relative to the pole ring **384**. If the optional second loop portion **392** is used, the hook portion **394** may be engaged with the second loop portion **392** to further prevent inadvertent movement of

the pole strap **382** relative to the pole ring **384** and also to prevent the free end portion of the pole strap **382** from dangling from the weight container **330**. Other fastening systems such as buckles, buttons, or the like may be used in addition or instead of the example hook and loop fastening system forming the example fastening system **386**.

While a number of materials may be used to satisfy the functional requirements of the third example weight container **330**, the materials described above with respect to the first example weight container **30** have been determined to provide a good balance of functionality and cost and may also be used to form like components of the third example container **330**.

The material forming the example strap **382** is nylon webbing. The nylon webbing forming the example strap **382** is a 1.5" Y pattern nylon webbing of 32 grams per yard.

The third example weight system **320** may be used to support either of the first and second example umbrella systems **22** and **24** or possibly other upright items such as construction or traffic cones, light poles, portable pole mounted heaters, or the like.

To use the third example weight system **320** to support the first example umbrella system **32**, the base assembly **120** is arranged at a desired location. The weight container **330** is then arranged such that the base stem **132** of the base structure **130** extends through the notch **340** in the weight container **330** and the lower wall **334** of the weight container **330** rests on the upper surface of the base structure **130**. The pole strap **382** is then extended across the notch **340** over the stem **132**, inserted through the pole ring **384**, and secured in place using the fastening system **386**. Inadvertent lateral movement of the base assembly **120** relative to the third example weight system **320** will thus be prevented by the securing system **380**.

The weight container **330** is placed in its open configuration, and the desired amount of fill material **346** is arranged within the interior chamber **342** through the fill opening **344**. The weight container **330** is then placed in its closed configuration. At this point, the weight of the weight container **330** and the fill material **346** contained by the weight container **330** will apply a downward force on the base structure **130**.

The desired amount of fill material **346** will depend upon the nature of the fill material and the specifics of the first example umbrella system **22**. The fill material **346** may be placed into the interior chamber **342** before arranging the notch **340** of the weight container **330** to receive the base stem **132**, but may require lifting and moving of the entire third example weight system **320**.

To use the third example weight system **320** to support the second example umbrella system **24**, the base assembly **160** is arranged at a desired location. The weight container **330** is then arranged such that the base stem **172** of the base structure **170** extends through the notch **340** in the weight container **330** and the lower wall **334** of the weight container **330** rests on the upper surfaces of at least some of the legs **174**, **176**, **178***a*, and **178***b*. The pole strap **382** is then extended across the notch **340** over the stem **172**, inserted through the pole ring **384**, and secured in place using the fastening system **386**. Inadvertent lateral movement of the base assembly **160** relative to the third example weight system **320** will thus be prevented by the securing system **380**.

The weight container **330** is placed in its open configuration, and the desired amount of fill material **346** is arranged within the interior chamber **342** through the fill opening **344**. The weight container **330** is then placed in its closed configuration. At this point, the weight of the weight container **330** and the fill material **346** contained by the weight container **330** will apply a downward force on the base structure **160**.

The desired amount of fill material **346** will depend upon the nature of the fill material and the specifics of the second example umbrella system **24**. The fill material **346** may be placed into the interior chamber **342** before arranging the notch **340** of the weight container **330** to receive the base stem **172**, but may require lifting and moving of the entire third example weight system **320**.

Although the example weight container **330** is substantially semicircular in top plan view and forms substantially semi-cylindrical shape with notch on the straight side thereof, other shapes may be used, several examples of which are described elsewhere in this application.

IV. Fourth Embodiment

Referring now to FIGS. **19-21** of the drawing, depicted therein is a fourth example weight system **420** constructed in accordance with, and embodying, the principles of the present invention. The fourth example weight system **420** comprises a fourth and fifth weight containers **430***a* and **430***b*. The fourth and fifth example weight containers **430***a* and **430***b* are or may be identical. For clarity, the same reference characters will be used to identify common elements of the separate weight containers **430***a* and **430***b*.

Additionally, the example fourth and fifth weight containers **430***a* and **430***b* share many elements of the third example weight container **330** described above. The example fourth and fifth example weight containers **430***a* and **430***b* will thus be described herein primarily to the extent that they differ from the third example weight container **330**.

The example weight containers **430***a* and **430***b* each define an upper wall **432**, a lower wall **434**, and a side wall **436**. The example upper and lower walls **432** and **434** are flat and semi-circular but could be rectangular or other shapes. The example side wall **436** comprises a first semi-cylindrical segment, first and second flat segments, and a second semi-cylindrical segment. The diameter defined by the first semi-cylindrical segment is larger than that defined by the second semi-cylindrical segment. Each of the first and second flat segments extends between the first and second semi-cylindrical segments. The fourth and fifth example weight containers **430***a* and **430***b* each further defines a notch **440** and an interior chamber **442**. A fill opening **444** is formed in each of the upper wall **432** through which fill material (not shown) is placed into the interior chamber **442**.

The example weight containers **430***a* and **430***b* each comprises first and second upper panels **450***a* and **450***b* defining the upper wall **432**, a lower panel **452** defining the lower wall **434**, and a side panel **454** defining the side wall **436**. The example panels **450***a*, **450***b*, **452**, and **454** are made of a flexible fabric capable of containing the fill material (not shown) and bearing the weight fill material when the weight container **430** is filled with the fill material as described with reference to the other example weight containers described herein. The example first and second upper panels **450***a* and **450***b* are joined to the side panel **454** by an upper seam (not shown). The example lower panel **452** is joined to the side panel **454** by a lower seam (not shown). A vertical seam (not shown) joins ends of the side panel **454** to form the side wall **436**. The example upper seam and lower seam may be constructed in the same manner as the example first upper seam **60** described above and will not be described herein in further detail.

A first outer edge of the example first upper panel **450***a* extends along a portion of a segmented path defined by the side wall **436**. A first overlap edge of the example first upper panel **450***a* intersects the segmented path defined by the first upper panel **450***a* at first and second intersection points.

The example second upper panel **450***b* defines a second outer edge that also extends partly along the segmented path. A second overlap edge defined by the example second upper panel **450***b* intersects the segmented path at third and fourth intersection points. When the example weight container **430** is assembled, the third and fourth intersection points defined by the second overlap edge are arranged between a line extending between the first and second intersection points and the notch **440**.

With the foregoing construction, the second overlap edge defined by the second upper panel **450***b* is arranged between the first overlap edge and the notch **440**. Accordingly, the example first and second panels **450***a* and **450***b* overlap in an overlap region **470**. The example overlap region intersects the segmented path at first and second intersection locations.

The example first and second upper panels **450***a* and **450***b* are sewn together by the first upper seam within the intersecting locations. The example first and second upper panels **450***a* and **450***b* are further sewn at least partly together by first and second chord stitches **472***a* and **472***b* and first and second end stitches **474***a* and **474***b*. The example first chord stitch **472***a* extends along a line extending between the first and second intersection points, while the example second chord stitch **472***b* extends along a line extending between the second and third intersection points. The example first and second chord stitches **472***a* and **472***b* are parallel to each other. The example end stitches **474***a* and **474***b* extend between the first and second chord stitches **472***a* and **472***b* at points that are approximately one fifth of the length of the chords defined by the first and second chord stitches **472***a* and **472***b* from the first and second intersection locations. The example end stitches **474***a* and **474***b* are parallel to each other.

The example chord stitches **472***a* and **472***b* and the example end stitches **474***a* and **474***b* divide the overlap region into a middle portion **476** and first and second end portions **478***a* and **478***b*. Outside of the middle portion **476**, the chord stitches **472***a* and **472***b* join the first and second upper panels **450***a* and **450***b* together. Within the middle portion **476**, the chord stitches **472***a* and **472***b* do not join the first and second upper panels **450***a* and **450***b* together but simply form seams to finish the edges of the first and second upper panels **472***a* and **472***b*. In particular, the example first chord stitch **472***a* forms a seam edge of the example first upper panel **450***a*, while the example second chord stitch **472***b* forms a seam edge of the example second upper panel **450***b*.

Accordingly, the first and second upper panels **450***a* and **450***b* are effectively sealed together in the first and second end portions **478***a* and **478***b*, but the fill opening **444** is defined between the first and second upper panels **450***a* and **450***b* within the middle portion **476**.

A closure system (not visible) is arranged to detachably attach the first and second upper panels **450***a* and **450***b* within the middle portion **476** to close the fill opening **444**. The example closure system is, like the example closure systems **80** and **280** described above, a hook and loop system, but other closure systems such as lacing, a zipper, or the like may be used in addition or instead. The example hook and loop system forming the closure system of the third example weight assembly **420** comprises a loop panel (not visible) secured to the first upper panel **450***a* within the middle portion **476** and a hook panel (not visible) secured to the second upper panel **450***b* within the middle portion **476**. The loop panel overlaps the loop panel to effectively seal the first and second upper panels **450***a* and **450***b* together. More specifically, when the loop panel is attached to the hook panel, the weight container **430** is in a closed configuration in which access to the interior chamber **442** through the fill opening **444** is prevented. When the loop panel is detached from the hook panel, the weight container **430** is in an open configuration in which access to the interior chamber **442** is allowed through the fill opening **444**. The fill material may be poured or otherwise passed through the fill opening **444** in the open configuration to allow the interior chamber **442** to be filled and/or emptied. A tab **479** may be secured to the first upper panel **450***a* to facilitate detachment of the hook panel from the loop panel and thus placement of the weight container **430** in the open configuration.

To fill the weight container **430**, the hook panel is disengaged from the loop panel to place the weight container **430** in its open configuration. In this open configuration, the fill material is poured or otherwise passed through the fill opening **444** until a desired amount of fill material is within the interior chamber **442**. During normal use of the fourth example weight container **430***a*, the hook panel engages the loop panel substantially to prevent the fill material from being displaced out of the interior chamber **442** through the fill opening **444**. The weight container **430** may be arranged in a desired relationship to the item to be supported prior to introduction of the fill material into the interior chamber **442** to minimize carrying of the fully loaded weight container **430**.

The example weight containers **430***a* and **430***b* each further comprises a securing system **480** comprising a pole strap **482**, a pole ring **484**, and a fastening system **486**. As will be apparent from the following discussion, both securing systems **480** are not always required, but the use of a securing system **480** on each of the weight containers **430***a* and **430***b* provides simplicity in manufacturing and inventory control and provides flexibility for different uses in the field.

The pole strap **482** is secured to the side panel **454** such that the first pole strap **482** extends from the weight container **430** adjacent to the notch **440**. In particular, a fixed end portion of the pole strap **482** is secured to the side panel **454** within the notch **440** such that a free end portion of the strap extends from the weight container **430** such that the free end portion strap can be extended from the first flat segment of the side wall **436** to the second flat segment of the side wall **436** across the notch **440**. The fixed end portion of the pole strap **482** is further inserted through a portion of the pole ring **484** and sewn back to itself such that the pole ring **484** is at the juncture of the second or inner semi-cylindrical segment of the side wall **436** defining the notch **440** and the second flat segment of the side wall **436**. The free end portion of the pole strap **482** may thus be extended across the notch **440** and through the pole ring **484** to secure the pole strap **482** across the notch **440**.

The pole strap **482** may be simply tied to itself to hold the pole strap **482** in place across the notch **440**. However, the fastening system **486** may be used to secure the pole strap **482** relative to the pole ring **484** when the pole strap **482** is extended through the pole ring **484**. The example fastening system **486** comprises a first loop portion **490** secured to the free end portion of the pole strap **482**, an optional second loop portion **492** secured to the first flat segment of the side wall **436**, and a hook portion **494** secured to the free end portion of the pole strap **482**. With the free end portion

extended through the pole ring **484** as shown in FIG. **19**, the first loop portion **490** and the hook portion **494** face each other and can be detachably attached to prevent inadvertent movement of the pole strap **482** relative to the pole ring **484**. If the optional second loop portion **492** is used, the hook portion **494** may be engaged with the second loop portion **492** to further prevent inadvertent movement of the pole strap **482** relative to the pole ring **484** and also to prevent the free end portion of the pole strap **482** from dangling from the weight container **430**. Other fastening systems such as buckles, buttons, or the like may be used in addition or instead of the example hook and loop fastening system forming the example fastening system **486**.

In addition, each of the example fourth and fifth weight containers **430***a* and **430***b* comprises a container joining system **520** that allow the example fourth and fifth containers **430***a* and **430***b* to be joined together. The example container joining system **520** comprises a first joining strap **522**, a second joining strap **524**, a joining ring **526**, and a strap joining system **528**. A fixed end portion of the first joining strap **522** is sewn to the first semi-cylindrical segment of the first side wall **436** such that a free end portion of the first joining strap **522** extends from a juncture of the first semi-cylindrical segment of the first side wall **436** and the second flat segment of the first side wall **436**. The second joining strap **524** is inserted through a portion of the joining ring **526**, and both ends of the second strap **524** are sewn to the first semi-cylindrical segment of the first side wall **436**. The joining ring **526** is located adjacent to a juncture of the first semi-cylindrical segment of the first side wall **436** and the first flat segment of the first side wall **436**. The free end of the first joining strap **522** and the joining ring **526** are arranged on opposite sides of the notch **440**.

The example strap joining system **528** may be used to secure the first joining strap **522** relative to an adjacent one of the joining ring **526** when the first joining strap **522** is extended through the adjacent one of the joining rings **526**. The example fastening system **528** comprises a loop portion **530** secured to the fixed end portion of the first joining strap **522** and a hook portion **532** secured to the free end portion of the first joining strap **522**. With the free end portion extended through one of the joining rings **526** as shown in FIG. **19**, the loop portion **530** and the hook portion **532** face each other and can be detachably attached to prevent inadvertent movement of the first joining strap **522** relative to one of the joining rings **526**. Other fastening systems such as buckles, buttons, or the like may be used in addition or instead of the example hook and loop fastening system forming the example strap joining system **528**.

While a number of materials may be used to satisfy the functional requirements of the fourth example weight containers **430***a* and **430***b*, the materials described above with respect to the first example weight container **30** have been determined to provide a good balance of functionality and cost and may also be used to form like components of the fourth example weight containers **430***a* and **430***b*.

The material forming the example pole strap **482** and first and second joining straps **522** and **524** is nylon webbing. The nylon webbing forming the example straps **482**, **522**, and **524** is a 1.5" Y pattern nylon webbing of 32 grams per yard.

The fourth example weight system **420** may be used to support either of the first and second example umbrella systems **22** and **24** or possibly other upright items such as construction or traffic cones, light poles, portable pole mounted heaters, or the like.

To use the fourth example weight system **420** to support the first example umbrella system **22**, the base assembly **120** is arranged at a desired location. The fourth and fifth example weight containers **430***a* and **430***b* are then arranged such that the base stem **132** of the base structure **130** extends through the notch **440** in either of the fourth and fifth weight containers **430***a* and **430***b* and the lower walls **434** of one or both of the fourth and fifth weight containers **430***a* and **430***b* rest on the upper surface of the base structure **130**. The pole strap **482** is then extended across the notch **440** over the stem **132**, inserted through the pole ring **484**, and secured in place using the fastening system **486**. At this point, the first joining strap **522** of the fourth example weight container **430***a* will be adjacent to the joining ring **526** of the fifth example weight container **430***b* and the first joining strap **522** of the fifth example weight container **430***a* will be adjacent to the joining ring **526** of the fourth example weight container **430***b*. The joining straps **522** are inserted through the adjacent joining rings **526** and secured in place using the strap joining system **528**. Inadvertent lateral movement of the base assembly **120** relative to the fourth example weight system **420** will thus be prevented by the securing system **480**.

The fourth and fifth weight containers **430***a* and **430***b* are placed in their open configurations, and the desired amount of fill material is arranged within the interior chambers **442** through the fill openings **444**. The fourth and fifth example weight containers **430** are then placed in their closed configurations. At this point, the weight of the weight containers **430***a* and **430***b* and the fill material **446** contained by the weight containers **430***a* and **430***b* will apply a downward force on the base structure **130**.

The desired amount of fill material will depend upon the nature of the fill material and the specifics of the first example umbrella system **42**. The fill material may be placed into the interior chamber **442** before arranging the notch **440** of the weight container **430** to receive the base stem **132**, but may require lifting and moving of the loaded fourth and fifth example weight containers **430***a* and **430***b*. Because the joining strap assemblies **520** may be disconnected to detach the fourth and fifth example weight containers **430***a* and **430***b* from each other, however, these fourth and fifth example weight containers **430***a* and **430***b* may be moved separately.

To use the fourth example weight system **420** to support the second example umbrella system **24**, the base assembly **160** is arranged at a desired location. The fourth and fifth weight containers **430***a* and **430***b* are then arranged such that the base stem **172** of the base structure **170** extends through the notch **440** one of the weight containers **430***a* and **430***b* and the lower walls **434** of at least one, and typically both, of one or both of the fourth and fifth weight containers **430***a* and **430***b* rest on the upper surfaces of at least some of the legs **174**, **176**, **178***a*, and **178***b*. The pole strap **482** is then extended across the notch **440** over the stem **172**, inserted through the pole ring **484**, and secured in place using the fastening system **486**. At this point, the first joining strap **522** of the fourth example weight container **430***a* will be adjacent to the joining ring **526** of the fifth example weight container **430***b* and the first joining strap **522** of the fifth example weight container **430***a* will be adjacent to the joining ring **526** of the fourth example weight container **430***b*. The joining straps **522** are inserted through the adjacent joining rings **526** and secured in place using the strap joining system **528**. Inadvertent lateral movement of the base assembly **160** relative to the fourth example weight system **420** will thus be prevented by the securing system **480**.

The fourth and fifth weight containers **430***a* and **430***b* are placed in their open configurations, and the desired amount

of fill material is arranged within the interior chambers **442** through the fill openings **444**. The fourth and fifth example weight containers **430** are then placed in their closed configurations. At this point, the weight of the weight containers **430***a* and **430***b* and the fill material **446** contained by the weight containers **430***a* and **430***b* will apply a downward force on the base structure **160**.

The desired amount of fill material will depend upon the nature of the fill material and the specifics of the second example umbrella system **24**. The fill material **446** may be placed into the interior chamber **442** before arranging the notch **440** of the weight container **430** to receive the base stem **172**, but may require lifting and moving of the loaded fourth and fifth example weight containers **430***a* and **430***b*. Because the joining strap assemblies **520** may be disconnected to detach the fourth and fifth example weight containers **430***a* and **430***b* from each other, however, these fourth and fifth example weight containers **430***a* and **430***b* may be moved separately.

In addition to a side by side arrangement as depicted in FIG. **19**, any of the example containers **30**, **230**, **330**, or **430***a* and **430***b* may be stacked one on top of any of the other example containers **30**, **230**, **330**, or **430***a* and **430***b*. In such a stacked configuration, only one of the weight containers may be in direct contact with the base member **130** or **160**. The weight of the uppermost weight container of the stack is transferred to the base member **130** or **160** through the lowermost, and any intermediate, weight member of the stack. In this case, the joining straps such as the example joining straps **520** need not be used as shown in FIG. **19** to connect the example weight containers to each other. When stacked, the through holes **40** and **240** of the weight containers **30** and **230** receive the stem portion **132** or **162** to hold the weight containers **40** and/or **240** together. With weight containers **330**, **430***a*, and **430***b* without a through hole, a securing system such as the securing systems **480** of the example weight containers **430***a* and **430***b* may be used to attach the respective weight containers **330**, **430***a*, and **430***b* around the stem portion **132** or **172** as described above.

Although the example weight containers **430***a* and **430***b* are substantially semicircular in top plan view and each form a substantially semi-cylindrical shape with notch on the straight side thereof, other shapes may be used, several examples of which are described elsewhere in this application.

What is claimed is:

1. A weight system for containing fill material for supporting a free-standing object, comprising:

a weight container comprising an upper wall, a lower wall, and an outer side wall and defining

an interior chamber adapted to contain the fill material, and

a fill opening defined at least in part by the upper wall through which the fill material can be introduced into the interior chamber, wherein

the upper wall comprises at least one upper wall panel made of flexible fabric,

the outer side wall comprises at least one outer side wall panel made of flexible fabric;

a closure system comprising first and second closure portions, where

the first closure portion is configured to be engaged with the second closure portion to arrange the closure system in a closed configuration,

the first closure portion is configured to be at least partly disengaged from the second closure portion to arrange the closure system in an open configuration, and

the closure system is arranged relative to the fill opening such that

arrangement of the closure system in the closed configuration substantially prevents fill material from passing through the fill opening, and

arrangement of the closure system in the open configuration allows fill material to pass through the fill opening;

a first upper seam configured to join at least a portion of the at least one upper wall panel to at least a portion of the at least one outer side wall panel;

at least one lateral stitch arranged to secure the first closure portion relative to the at least one upper wall panel and along at least a portion of one side of at least a portion of the fill opening, where at least a portion of the at least one lateral stitch coincides with the first upper seam;

a first end stitch arranged at a first end of the closure system to define a first end of the fill opening; and

a second end stitch arranged at a second end of the closure system to define a second end of the fill opening.

2. A weight system as recited in claim **1**, further comprising a joining system configured to allow at least a portion of the container to be secured relative to the free-standing object.

3. A weight system as recited in claim **1**, in which:

the weight container further comprises an inner side wall;

a second upper seam is configured to join the at least one upper wall panel to the at least one inner side wall; and

a lower seam is configured to join the at least one lower wall to the at least one inner side wall.

4. A weight system as recited in claim **1**, in which:

at least one of the at least one lateral stitch and the first and second end stitches join at least one of the at least one upper wall panel and the at least one outer side wall panel together to define an overlap region; and

the fill opening is arranged within the overlap region.

5. A weight system as recited in claim **1**, in which the closure system comprises a zipper.

6. A weight system as recited in claim **1**, in which the closure system comprises a hook panel and a loop panel.

7. A weight system as recited in claim **1**, in which the at least one lateral stitch comprise first and second lateral stitches, where at least a portion of at least one of the first and second lateral stitches intersects the first upper seam.

8. A weight system as recited in claim **1**, in which:

at least a portion of the at least one upper wall panel is configured to define an overlap region; and

at least a portion of the fill opening is arranged within the overlap region.

9. A weight system as recited in claim **1**, in which:

at least a portion of the at least one upper wall panel is configured to define an overlap region; and

at least a portion of the closure system is arranged within the overlap region.

10. A weight system as recited in claim **1**, in which:

at least a portion of the at least one upper wall panel is configured to define an overlap region;

at least a portion of the fill opening is arranged within the overlap region; and

at least a portion of the closure system is arranged within the overlap region.

11. A weight system for containing fill material for supporting a free-standing object, comprising:

a weight container comprising an upper wall, a lower wall, and an outer side wall and defining

an interior chamber adapted to contain the fill material, and

a fill opening defined at least in part by the upper wall through which the fill material can be introduced into the interior chamber, wherein

the upper wall comprises at least one upper wall panel made of flexible fabric,

the outer side wall comprises at least one outer side wall panel made of flexible fabric;

a closure system comprising first and second closure portions, where

the first closure portion is configured to be engaged with the second closure portion to arrange the closure system in a closed configuration,

the first closure portion is configured to be at least partly disengaged from the second closure portion to arrange the closure system in an open configuration, and

the closure system is arranged relative to the fill opening such that

arrangement of the closure system in the closed configuration substantially prevents fill material from passing through the fill opening, and

arrangement of the closure system in the open configuration allows fill material to pass through the fill opening; wherein

a first upper seam configured to join at least a portion of the at least one upper wall panel to at least a portion of the at least one outer side wall panel;

at least one lateral stitch arranged

to secure the first closure portion relative to the at least one upper wall panel and along at least a portion of one side of at least a portion of the fill opening, where at least a portion of the at least one lateral stitch coincides with the first upper seam, and

such that at least a portion of the at least one upper wall panel is configured to define an overlap region;

a first end stitch arranged at a first end of the closure system to define a first end of the fill opening; and

a second end stitch arranged at a second end of the closure system to define a second end of the fill opening.

12. A weight system as recited in claim 11, in which at least a portion of the fill opening is arranged within the overlap region.

13. A weight system as recited in claim 11, in which at least a portion of the closure system is arranged within the overlap region.

14. A weight system as recited in claim 11, in which:

at least a portion of the fill opening is arranged within the overlap region; and

at least a portion of the closure system is arranged within the overlap region.

15. A weight system as recited in claim 11, in which the closure system comprises a zipper.

16. A weight system as recited in claim 11, in which the closure system comprises a hook panel and a loop panel.

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